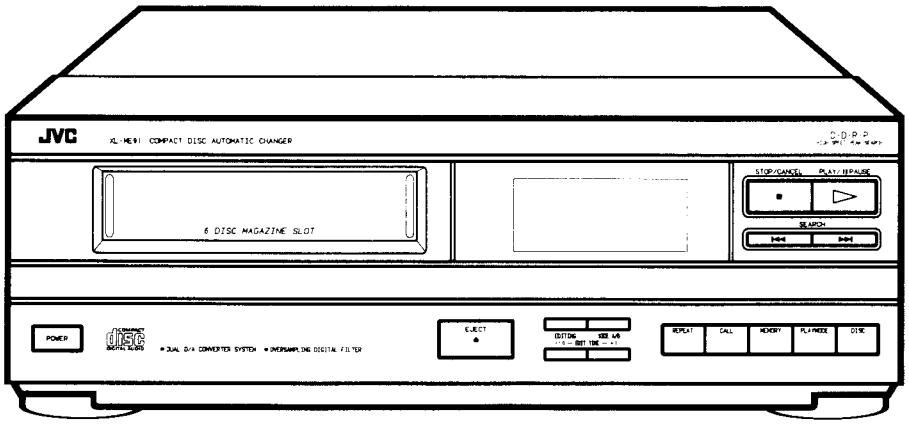
JVC

SERVICE MANUAL

COMPACT DISC AUTOMATIC CHANGER

MODEL No. XL-ME91BK



COMPACT disc DIGITAL AUDIO

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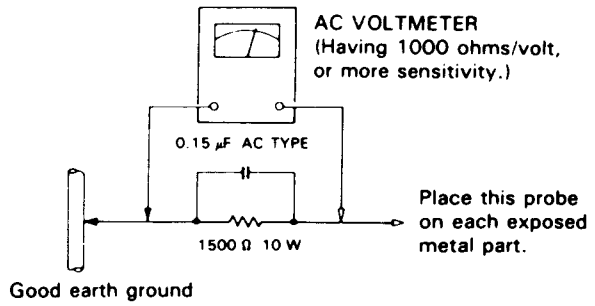
No. 20132
Jul. 1989

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).


AC VOLTMETER
(Having 1000 ohms/volt, or more sensitivity.)
0.15 μF AC TYPE
1500 Ω 10 W
Place this probe on each exposed metal part.
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER: Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION: There are no serviceable parts inside the Laser Unit.
4. CAUTION: Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
5. CAUTION: The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
6. CAUTION: If safety switches malfunction, the laser is able to function.
7. CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

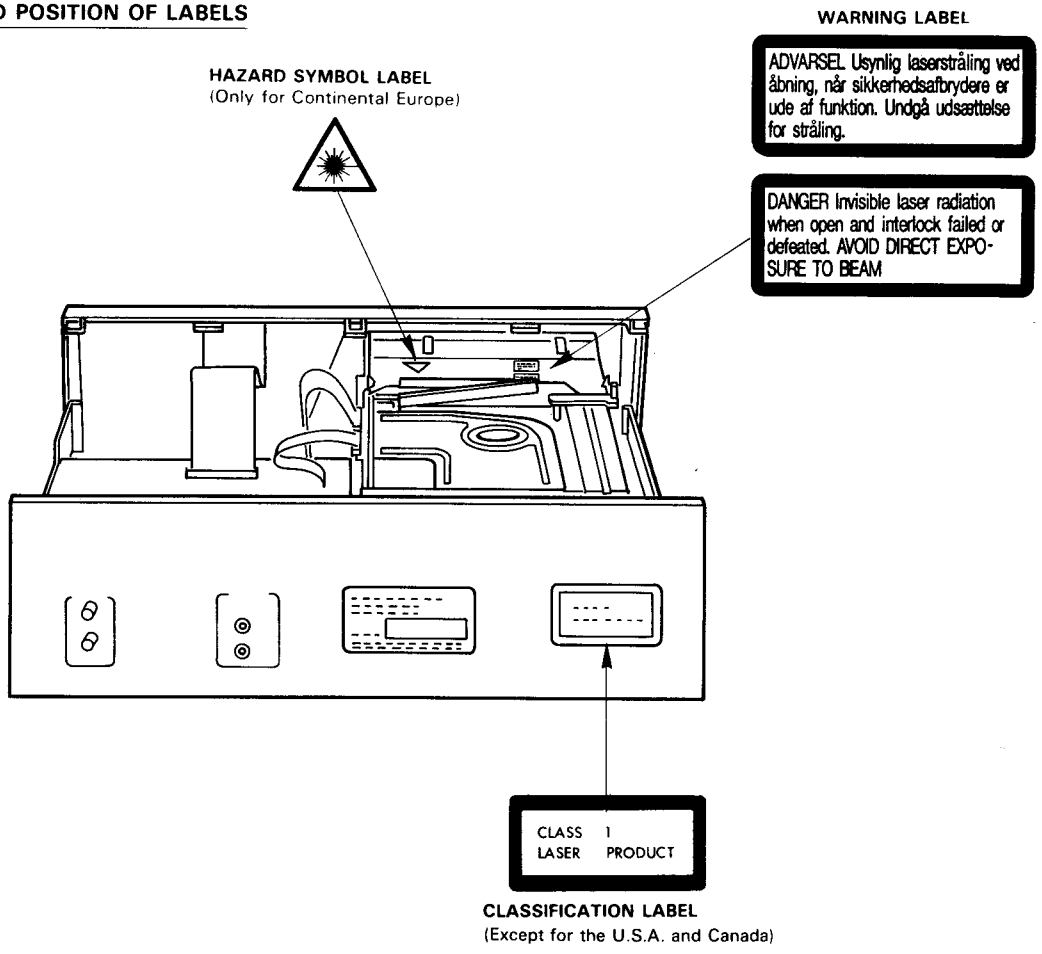
VARNING: OSYNLIG LASERSTRÅLNING UPPSTÅR VID KOMPONENTENS ÖPPNING NÄR SAKERHETSBRYTAREN ÄR FRÅNSLAGEN.

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅPNING NÅR SIKKERHETSBRYTEREN ER AVSLOTT.
UNNGÅ UTSETTELSE FOR STRÅLING.

VAROITUS: LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ (NÄKYMÄTÖNTÄ) SILMILLE VAARALLISTA LASERSÄTEILYÄ.

REPRODUCTION AND POSITION OF LABELS


WARNING LABEL
ADVARSEL Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.
DANGER Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM
HAZARD SYMBOL LABEL
(Only for Continental Europe)
CLASS 1
LASER PRODUCT
CLASSIFICATION LABEL
(Except for the U.S.A. and Canada)

FRONT PANEL
VORDERSEITE
FACE AVANT
VOORPANEEL
PANEL FRONTAL
FAMSIDA

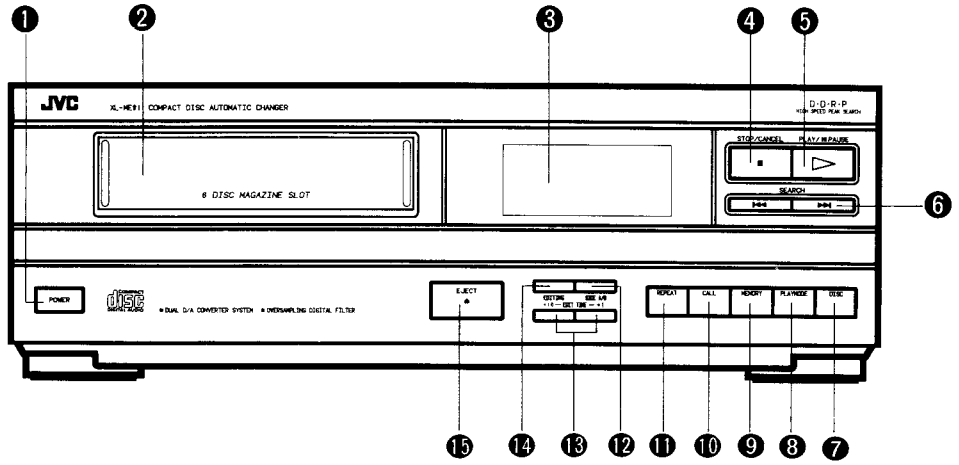


Fig. 1
Abb. 1
Afb. 1

MULTI MODE DISPLAY
MULTI MODE DISPLAY
AFFICHAGE MULTIMODE
MULTI MODE DISPLAY
VISUALIZADOR DE MODO MÚLTIPLE
DISPLAY MED MÅNGA FUNKTIONER

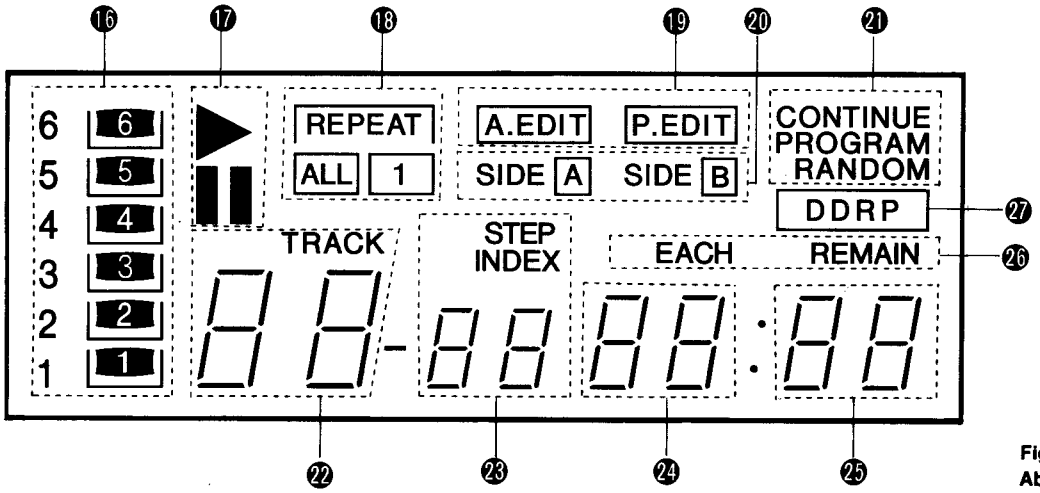


Fig. 2
Abb. 2
Afb. 2

ENGLISH

Thank you for purchasing this JVC product.
Before you begin operating this unit, please read the instructions carefully to be sure you get the best possible performance.
If you have any question, consult your JVC dealer.

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COMPU LINK
Remote Control System

COMPU LINK (remote) Control System is a convenient system using COMPU LINK-1/SYNCHRO terminals on the rear panel. For further details, refer to page 6.

D•D•R•P
DIGITALIZED PEAK DETECTOR & RECORDING PROCESSOR

This product can be combined with a DDRP system (cassette receiver or amplifier + cassette deck etc.) to enable setting the optimum recording level automatically. Refer to these instructions for details.

PRECAUTION IN USE

Installation
— Select a location which is level, dry, and **Neither too cold nor too hot (between 5°C (41°F) and 35°C (95°F).**
— Avoid a dusty location or a location subject to vibrations.

Power
— When unplugging from the wall outlet, always pull on the plug, not on the power cord.

Malfunctions, etc.
— Do not insert any metallic object into the CD changer.
— The discs to be played on this player are limited to those bearing the mark below (Fig. 3)
— Placing anything other than a compact disc on the platter may cause the player to malfunction.
— If something goes wrong, turn the power off immediately. If the same phenomenon occurs when the power is turned on again, turn the power off and consult your JVC dealer.

Volume setting
As a compact disc causes almost no noise, it is difficult to set the volume level by listening to noise as in the case of an ordinary analog turntable or a tape deck. If the volume level is raised too much because the beginning of the selection is quiet, the speakers may be damaged by a sudden increase in the sound level.

Condensation
As the CD changer uses optical parts, moving it from a cold to a warm place or using it in a room subject to excessive humidity or in a room where a fire has just been lit may cause condensation on the optical parts. This phenomenon may prevent the light from being correctly transmitted, and may cause noise or malfunction.
If dew condenses and the CD changer does not function correctly, leave it on for several hours with the power turned on.
If the CD changer does not function even after such a period, consult your dealer.

Notes:
- **When this unit is placed near a tuner or a receiver tuned to AM reception, noise may occur. If this happens, move this unit as far away from the tuner or the receiver as possible, or briefly turn off the power of this unit.**
- **When carrying the unit, avoid tilting it or turning it upside down. If this cannot be avoided, first take out the magazine.**

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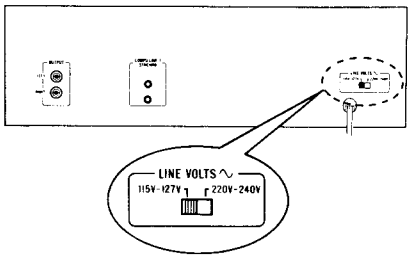
Fig. 3

BEFORE USE

■ **CHECKING YOUR LINE VOLTAGE (Except for U.S.A., Canada, Australia, U.K. and Continental Europe.)**
Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area. If it doesn't be sure to adjust the voltage selector switch to the proper setting before operating this equipment. The voltage selector switch is located on the rear panel.

CAUTION:
- Before setting the "Voltage selector switch" to proper voltage disconnect the power plug.



■ **How to place CDs**

1. If the CD changer is already equipped with the provided magazine, press the [EJECT (⏏)] button and slide the magazine out.

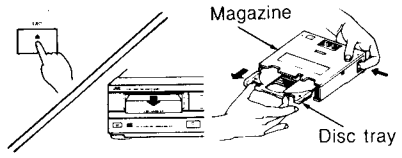


Fig. 4

2. Disc trays in the magazine are removable. Depress the tray lock button, and slide the disc tray partway out.
3. Draw out the disc tray gently with both hands, and place a disc with its label side up while holding the disc tray with one hand.

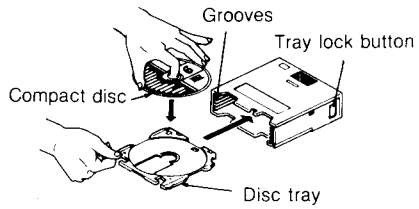
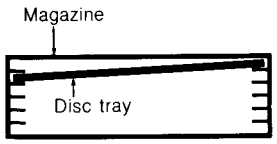


Fig. 5

4. Line up the disc with the grooves in the magazine, and push the disc tray all the way in. Never bend or force the disc tray into the magazine. It is not necessary to depress the tray lock button when inserting the disc tray.

Notes:

- **Disc tray inserted on the bias may cause a mulfunction.**



No diagonal insertion **Fig. 6**

- **There are openings in the disc trays for signal reading.**
  These openings leave part of the shiny side of the disc exposed. So, be careful not to touch the shiny surface of the disc.
- **It is not possible to play the selection, if the disc is placed upside down.**
- **Never put a single disc directly into the magazine.**
- **Always keep the magazine loaded with six disc trays.**
- **When removing or inserting disc trays, hold the magazine leveled.**

COMPU LINK CONTROL SYSTEM

This is a convenient system which has been originated and developed by JVC. The following are the brief explanations of its major performances:

Automatic Source Selection

When the provided remote cables are used for connecting this unit to other components which have SYNCHRO terminals, the switch-over of all system components is possible with simple one-touch of the source selector button of JVC's amplifier or receiver. By doing this, the corresponding component will start playing automatically. The source select button of the remote control unit or the activation button of the desired component can be also used for this purpose.
When the components have been switched over, the previous component will stop playing within five seconds.

Synchronized Recording

Synchronized recording refers to the process in which the cassette deck starts recording in synchronism with the CD changer. Perform the synchronized recording as follows.

1. Set the cassette deck to the REC/PAUSE mode in accordance with the procedures in the instructions.
2. If you want the programmed recording, program the desired tunes in any order you wish to hear.
3. Press the [PLAY (▶)] button of the CD changer. By so doing, the cassette deck is placed in the record mode and synchronized with the CD changer for recording. Synchronized recording thus can be made possible.

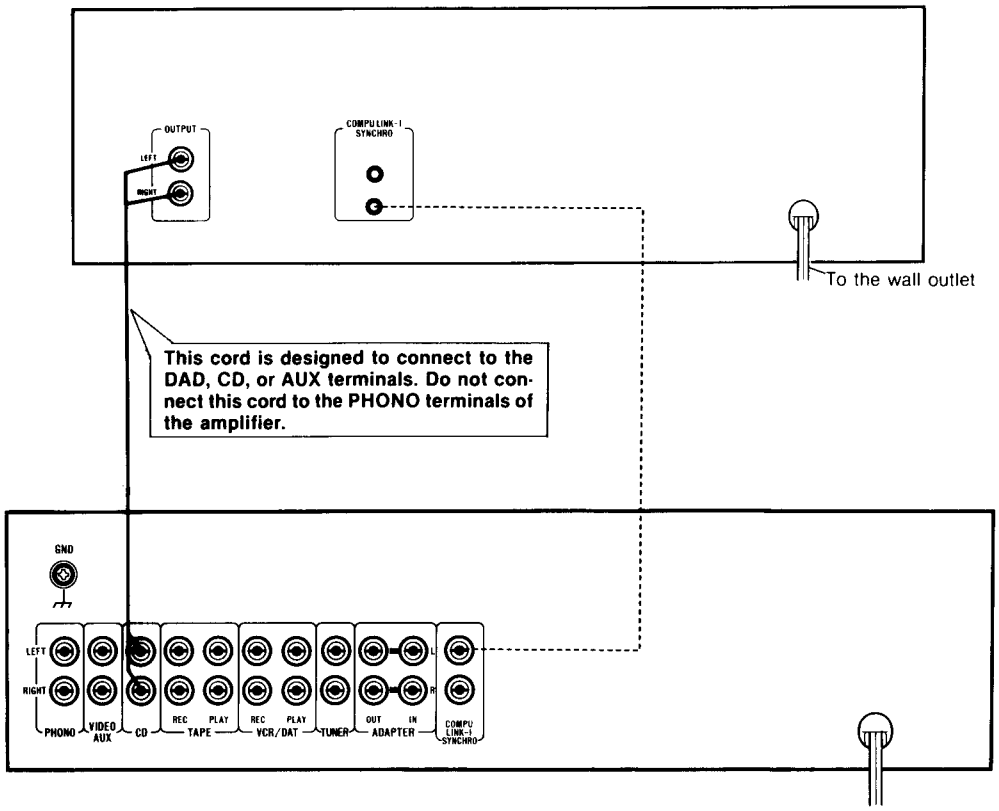
Notes:

- **Synchronized recording stops automatically when the CD changer stops playing.**
- **To cancel synchronized recording, press the [STOP (■)] button of the CD changer or cassette deck.**
- **Press the [REC (○)] and [PLAY (▶)] buttons of the cassette deck when starting in the middle of play.**
- **During synchronized recording, the operation of the [PLAY (▶)] button is interlocked with the cassette deck.**
- **When the REC/PAUSE mode is set by pressing [PAUSE (❚❚)] button after pressing the [REC (○)] and [PLAY (▶)] buttons simultaneously, synchronized recording is not possible. For details, refer to the instructions of the cassette deck.**
- **Abnormal operation will result if the power supply of the component(s) is interrupted midway. If this happens, press the activation button again to restart.**
- **Ensure that the SYNCHRO terminals of individual components are connected with the provided remote cables. Also be sure to read the instructions for each component very carefully.**
- **The source is locked to the CD position during synchronized recording to avoid accidental stops or switch-over to another component. To switch over the components, cancel synchronized recording first.**
- **The synchronized recording is only possible with the JVC product which has the SYNCRHO terminals. For further details, consult your JVC dealer.**
- **Only the JVC cassette decks with the synchronized recording feature can be used with this equipment for synchronized recording. Contact the JVC dealer for details.**

CONNECTION DIAGRAM

—Do not connect the power plug unless all the connection is completed—

An example of connecting to the amplifier



Notes:

- **Either one of these two COMPU LINK-1/SYNCHRO terminals can be used.**
- **The synchronized recording is only possible with JVC products which have the COMPU LINK-1/SYNCHRO terminals. For further details, consult your JVC dealer.**

DESCRIPTION AND FUNCTIONS

❶ **POWER**
Press on (▬) the power, the display lights. Press again for off (▟), and the display goes out.

❷ **Magazine slot**
Insert a magazine that holds up to six discs. Push the magazine in until it clicks in place.

❸ **MULTI MODE DISPLAY**
This shows various program data and disc status information. For more details, see "MULTI MODE DISPLAY" on page 8.

❹ **STOP (■)/CANCEL**
Press this button once to stop playing. Pressing this button during a break in PROGRAM MODE enables the displayed program to be cancelled.

❺ **PLAY (▷)/PAUSE (❚❚)**
Press this button to start play from the first tune or the programmed play. Press this button again to pause. To restart playing, press this button once again.

❻ **SEARCH (⏮) (Backward)**
Press once (approx. 1/2 second) during play to return the sensor to the start of the current tune. Press twice to return the sensor to the start of the previous tune. Each time it is pressed, the sensor moves backward by one tune. Continue pressing this button to reverse the tracks.

SEARCH (⏭) (Forward)
Press once (approx. 1/2 second) during play to move the sensor to the start of the next tune. Each time it is pressed, the sensor moves forward by one tune. (When this button is pressed at the end of the last track, the sensor moves to the first tune of the next disc.)
Continue pressing this button to forward the tracks.

❼ **DISC**
Push this button to select discs in the magazine. Everytime this button is pressed, the disc number display changes in sequence from 1 to 6.

❽ **PLAY MODE**
Press this button to select the play mode when stop. Press this button repeatedly to change the play mode functions; i.e., PROGRAM, RANDOM and CONTINUE, in this sequence. These functions are displayed by the play mode indicators.

❾ **MEMORY**
In PROGRAM mode press this button to program the desired selection while the number of selected discs and tracks are blinking in the MULTI MODE DISPLAY.

❿ **CALL**
Use this button to check the programmed data. When this button is pressed, disc, track and step numbers which have been programmed are shown in the MULTI MODE DISPLAY from the first step.

⓫ **REPEAT (ALL/1)**
Press to repeat the selections in either the CONTINUE or PROGRAM mode. When this button is pressed the REPEAT indicator lights. The repeat function changes in the following sequence; Complete disc repeat (all the selections in six discs or all the programmed selections of the disc), single tune repeat and release.

REPEAT ALL → REPEAT 1 → (release)

⓬ **SIDE (A/B)**
Use this button to designate the tape side when programming for edit recording.

⓭ **EDIT TIME (+10, +1)**
Use these buttons to establish the time interval for edit recording.

⓮ **EDITING**
Use this button when you perform edit recording. Each time this button is pressed, A. EDIT and P. EDIT appears in turn.

⓯ **EJECT (⏏)**
Push this button to eject the magazine. If this button is pushed during play, play will automatically stop and the magazine will eject.

Notes:
- **This button does not function when power is off.**
- **Never force the magazine in while it is being ejected by pressing the EJECT button or the moment it has come out, since these actions could cause malfunctions.**

MULTI MODE DISPLAY

⓰ **Pictorial indication of disc status**
The discs in the magazine, the disc being played, or the movement of an individual disc within the magazine are pictorially displayed.

⓱ **PLAY/PAUSE indicators**
▶ : Lights during play.
❚❚ : Lights in the pause mode.

⓲ **REPEAT**
Lights when the repeat play is ready.
[ALL] : Lights when the repeat play of all the selections is entered.
[1] : Lights when the repeat play of only one selection is entered.

⓳ **EDITING indicators**
Lights during editing recording.
[A. EDIT] : Lights during Auto Edit Recording.
[P. EDIT] : Lights during Program Edit Recording.

⓴ **TAPE SIDE indicators**
SIDE [A] : Lights when the A side of the tape is designated.
SIDE [B] : Lights when the B side of the tape is designated.

㉑ **PLAY MODE indicators**
CONTINUE : Lights in CONTINUE PLAY MODE.
PROGRAM : Lights in PROGRAM PLAY MODE.
RANDOM : Lights in RANDOM PLAY MODE.

㉒ **TRACK**
Lights when all the selections of the disc are shown.
Shows the programmed selection numbers or the current selection number of the disc during programmed play.

㉓ **STEP/INDEX**
STEP : Shows the numbers of memory steps of the programmed selections.
INDEX : Shows the number of index.

㉔ **Time indicator (MINUTE)**
Shows the total playing time, elapsed playing time, or remaining playing time in minutes. (Shows nothing when the total number of selections is greater than 32.)

㉕ **Time indicator (SECOND)**
Shows the total playing time, elapsed playing time, or the remaining playing time in seconds.

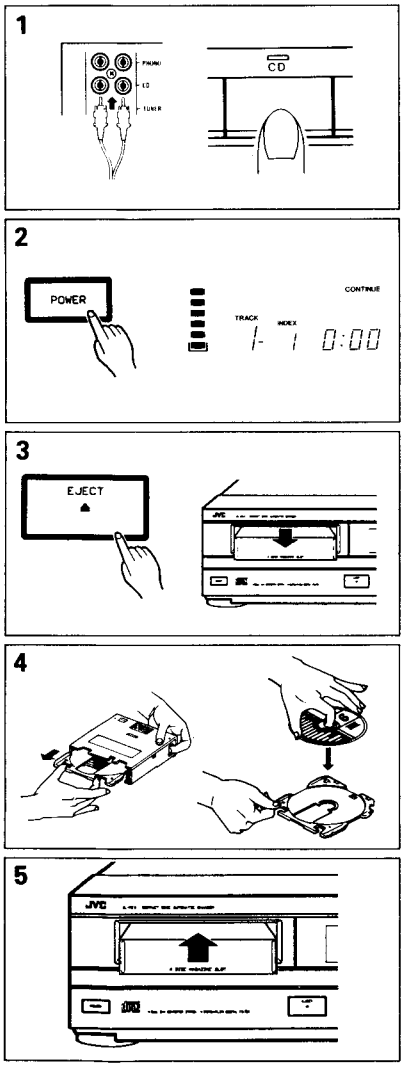
㉖ **EACH/REMAIN**
EACH : Shows elapsed time of each selection.
REMAIN : Shows remaining playing time of each selection.

㉗ **DDRP**
Lights when the D.D.R.P system functions.

HOW TO OPERATE

Preliminary Operation

1. Switch on and adjust components such as the amplifier connected to this unit to play selections on the CD changer.
2. Switch on the CD changer, and the MULTI MODE DISPLAY lights.
3. Push the [EJECT (⏏)] button to remove the magazine.
4. With its label side up, load a disc in the magazine. The magazine can hold up to six discs. For more details, see on page 6.
5. Push the magazine in gently until it locks.

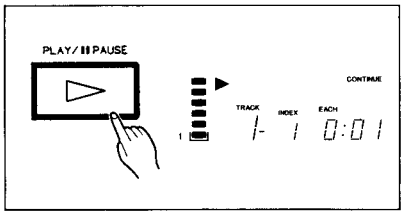


Normal Play

In normal play, it is possible to play back from any desired selection on any disc to the last selection of the sixth disc in the magazine continuously.

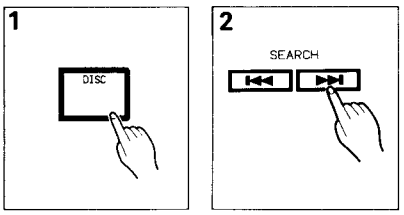
To Play From the First Selection

Press the [PLAY (▷)/PAUSE (❚❚)] button.



To Play From Any Desired Selection

1. Designate the desired disc with the [DISC] button.
2. Designate the desired selection with the [SEARCH (⏮ , ⏭)] button.



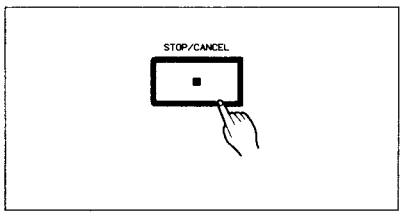
[Example]
To start playback from the ninth selection of the fourth disc, press the [DISC] button four times, and press [SEARCH (⏭)] button eight times.

Notes:

- **When a designated track number of a certain disc does not exist, play starts from the last selection of that disc.**
- **When a designated disc is not located in the magazine the light for that disc (▬) in the MULTI MODE DISPLAY goes out within about 4 seconds, then, play of the next disc will start.**

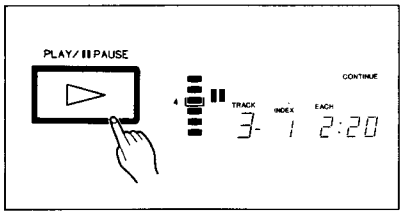
To Stop Play

Press the [STOP (■)/CANCEL] button.



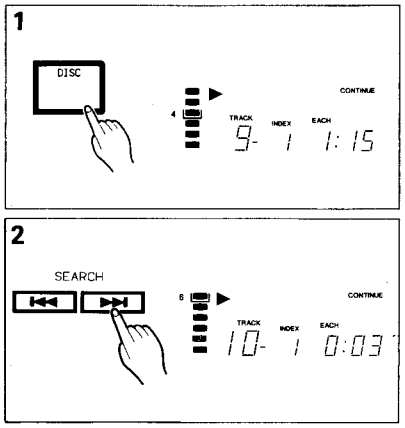
To Stop Play Temporarily

Press the [PLAY (▷)/PAUSE (❚❚)] button.



To Switch Selections During Play

1. Choose the desired disc with the [DISC] button.
2. Designate the desired selection with the [SEARCH (⏭)] button.

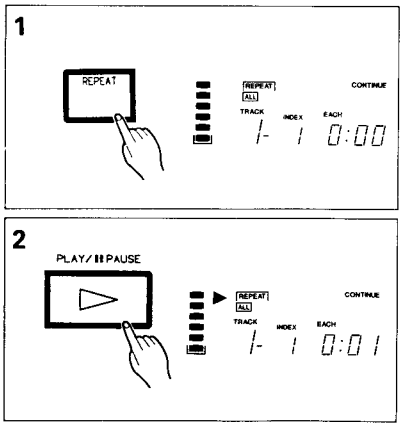


[Example]
To switch during play from the ninth selection of the fourth disc to the tenth selection of the sixth disc, press the [DISC] button twice and the [SEARCH (⏭)] button nine times.

To Repeat Play

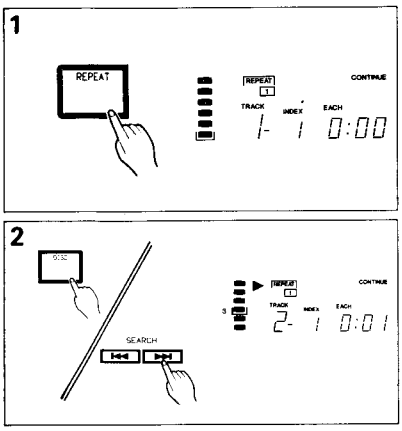
- **To repeat all the selections**

1. Press the [REPEAT (ALL/1)] button once.
2. Press the [PLAY (▷)/PAUSE (❚❚)] button.



- **To repeat one selection**

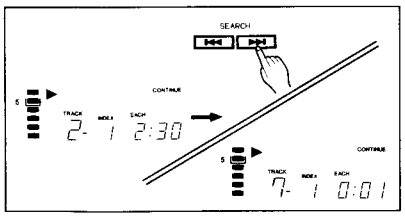
1. Press the [REPEAT (ALL/1)] button twice.
2. Designate the desired disc with the [DISC] button.
3. Designate the desired selection number with the [SEARCH (⏮ , ⏭)] button.



To Skip to the Next Selection During Play

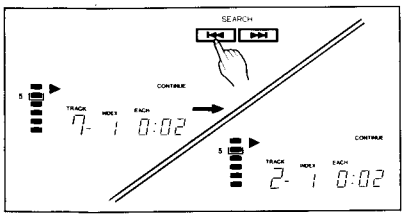
Press the [SEARCH (⏭)] button.

[Example]
To switch the second selection of the fifth disc to the seventh selection in the same disc, press the [SEARCH (⏭)] button five times



To Skip to Previous Selection During Play

Press the [SEARCH (⏮)] button, and locate the start of the current selection. Immediately after this, press the [SEARCH (⏮)] button until the desired track number appears in the MULTI MODE DISPLAY.



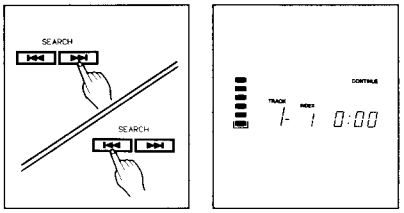
[Example]
To switch the seventh selection of the fifth disc to the second selection in the same disc, press the [SEARCH (⏮)] button six times.

How to operate the [SEARCH (⏮ , ⏭)] button.

The functions of this button are changed by the time of pressing the button.
less than 0.2 seconds: skip
more than 0.2 seconds: rapid traverse and reverse of the tune.

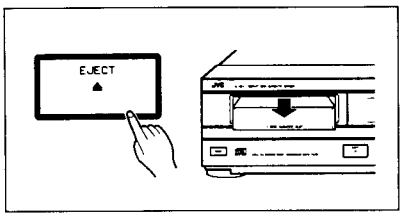
To Search for the Desired Track

Perform forward search by holding the [SEARCH (⏭)] button pressed, and backward search by holding [SEARCH (⏮)] button pressed respectively in the PLAY or PAUSE mode.
When the play ends, the CD changer enters the STANDBY MODE and the disc indicator (⏏) returns to its DISC 1 position.



To Remove the Disc

Push the [EJECT (⏏)] button to remove the magazine.

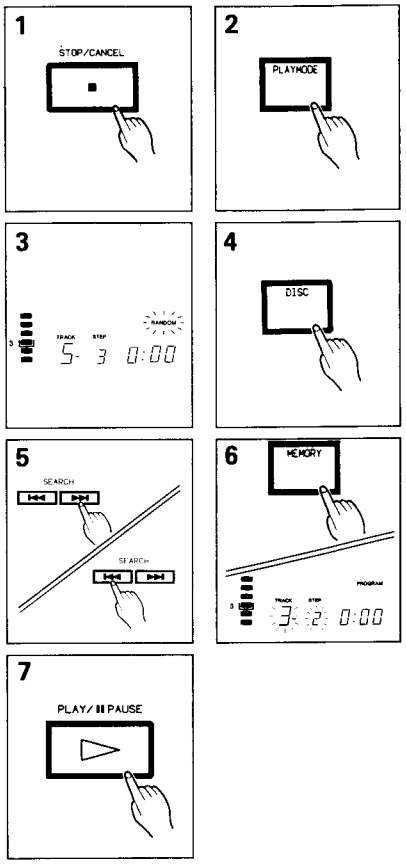


Programmed Play

From among 6 discs in the magazine up to 32 steps can be programmed for playback in any desired order.

How to Program and Play

1. Press the [STOP (■)/CANCEL] button.
2. Press the [PLAY MODE] button to set the PROGRAM indicator in the display window lights.
3. When the PROGRAM indicator is already lighted, a step has been programmed, do following operations.
   - If some selections are to be changed, perform the correction in accordance with "How to correct the programmed data" on page 11.
   - If no programmed selection is required, remove the magazine with the [EJECT (⏏)] button and insert it again.
4. Press the [DISC] button to select the desired disc.
5. Select the desired track with the [SEARCH (⏮)] or [SEARCH (⏭)] button.
   - If you program all the selections of the disc, you do not need to do this operation.
6. Press the [MEMORY] button while the step and track number are blinking.
   - Repeat above procedures 4, 5 and 6 to program the desired tracks sequentially (a maximum of 32 steps are programmable).
7. Press the [PLAY (▷)/PAUSE (⏸)] button. Play begins in the programmed order.



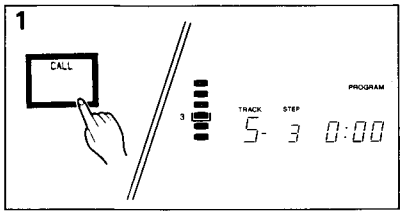
Notes:

- **During programmed play or in the pause mode, pressing the [SEARCH (⏭)] button skips to the next tune in the programmed order.**
- **To stop temporarily during programmed play, press the [PLAY (▷)/PAUSE (⏸)] button; press this button again to restart.**
- **If the disc indicators (▬) are not lit, none of the discs (loaded in the magazine) can be programmed.**
  In this case, remove the magazine with the [EJECT (⏏)] button.
  Reinsert the magazine, the disc indicator (▬) will light. (When the disc indicator (▬) is lit, the discs in the magazine can be programmed.)

How to Check the Programmed Selections

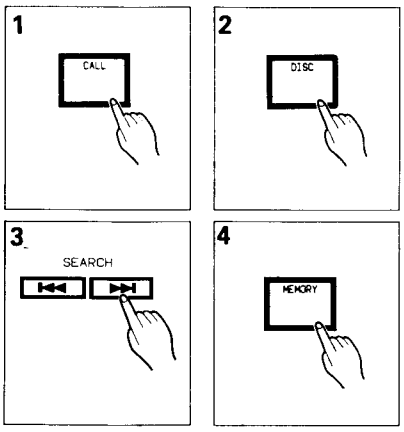
Checking the programmed selections is only possible when the disc is not rotating.

1. Everytime the [CALL] button is pressed, the disc number and track number are displayed in the MULTI MODE DISPLAY in their programmed order.



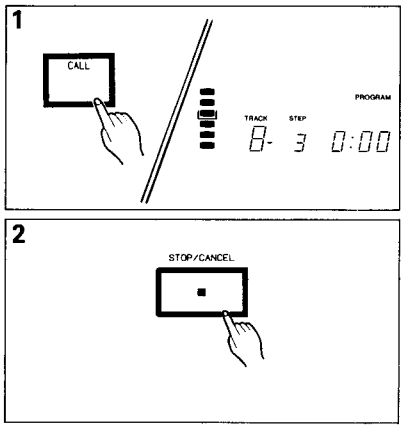
How to Correct the Programmed Data

1. Press the [CALL] button until the programmed selection which needs to be corrected appears in the MULTI MODE DISPLAY.
2. Press the [DISC] button to select the desired disc.
3. Press the [SEARCH (⏮ , ⏭)] buttons to designate the desired selection.
4. Press the [MEMORY] button.



How to Cancel the Programmed Data

1. Press the [CALL] button until the programmed selection which needs to be canceled appears in the MULTI MODE DISPLAY.
2. Press the [STOP (■)/CANCEL] button. Repeat above procedure to cancel all the programs.

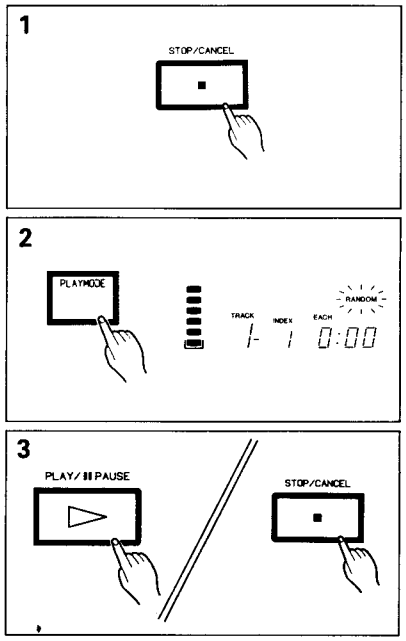


Random Play

The CD changer selects and plays tracks at random, from among the six discs in the magazine, in random mode.

1. Press the [STOP (■)/CANCEL] button.
2. Press the [PLAY MODE] button to select the RANDOM mode.
3. Press the [PLAY (▷)/PAUSE (❚❚)] button to start random play.

- Press the [STOP (■)/CANCEL] button to stop random play.



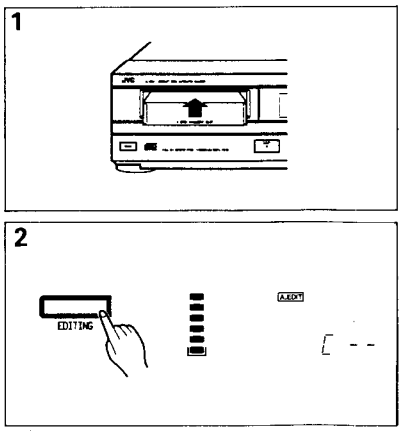
Note:

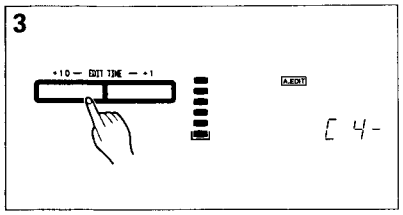
- **From first track to sixty-fourth track per each disc can be selected in random mode.**

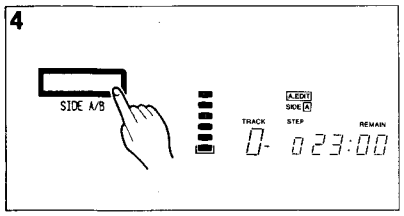
To Perform Edit Recording

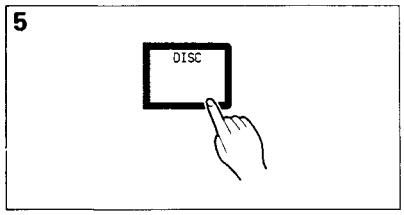
Auto Edit Recording

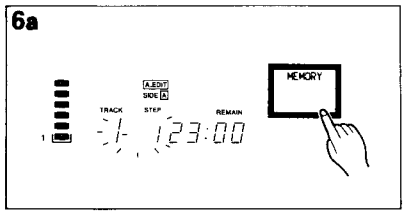
1. Set a magazine.
2. Press the [EDITING] button to display A. EDIT in the MULTI MODE DISPLAY.
3. Establish the time interval according to the tape length with the [EDIT TIME (+ 10, + 1)] buttons*
   * To establish 30 minutes, press the [+ 10] button three times.
     To establish 46 minutes, press the [+ 10] button four times and then the [+ 1] button six times.
4. Press the [SIDE A/B] button
5. Press the [DISC] button to designate the desired disc.
6. Two cases for step 6. Choose either (a) or (b).
   (a) If you start editing from the first selection of the disc, press the [MEMORY] button while track number and step number are blinking.
   (b) If you start editing from any desired selection of the disc, press the [SEARCH (⏮ , ⏭)] button to designate the selection and then press the [MEMORY] button while track number and step number are blinking.
7. Repeat steps 5 and 6 to program other discs.
8. Place the cassette deck in REC PAUSE mode.
   This operation is limited to the units using JVC's COMPU LINK system. For other cassette decks, set the deck in recording status before pressing the [PLAY (▷)/PAUSE (❚❚)] button.
9. Press the [PLAY (▷)/PAUSE (❚❚)] button. When the last selection programmed on the A side of the tape ends, the edit recording automatically stops. To record on the other side of the tape, turn over the tape and repeat the steps 8 and 9.

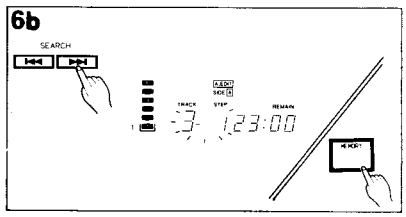


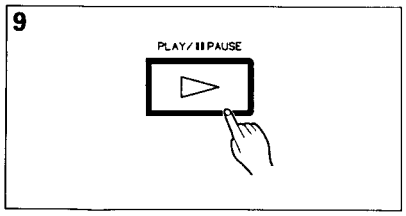






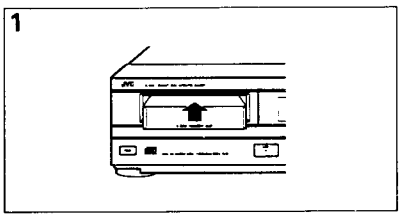


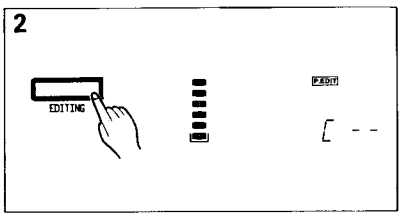


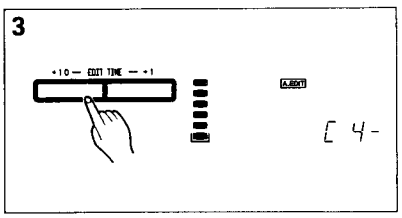


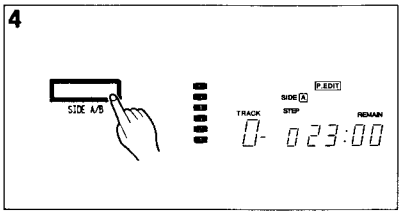
Program Edit Recording

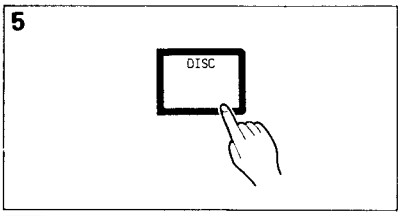
1. Set a magazine.
2. Press the [EDITING] button to display P. EDIT in the MULTI MODE DISPLAY.
3. Establish the time interval according to the tape length with the [EDIT TIME (+10, +1)] buttons*.
   * To establish 30 minutes, press the [+10] button three times.
     To establish 46 minutes, press the [+10] button four times and then [+1] button six times.
4. Press the [SIDE A/B] button.
5. Press the [DISC] button to designate the desired disc.
6. Press the [SEARCH (⏮ , ⏭)] button to designate the desired selection and then press the [MEMORY] button while track number and step number are blinking.
   When the selection is programmed, the time for it is subtracted from the established time interval and the remain time is displayed.
7. Repeat steps 5 and 6 to program other discs.
8. After you finish the programming of the A side to the tape, press the [SIDE A/B] button.
9. Repeat steps 5 and 6.
10. Place the cassette deck in REC PAUSE mode. This operation is limited to the units using JVC's COMPU LINK system. For other cassettes deck, set the deck in recording status.
11. Press the [PLAY (▷)/PAUSE (⏸)] button.
    When the last selection programmed on the A side of the tape ends, edit recording automatically stops. To continue edit recording, turn over the tape and then repeat steps 10 and 11.

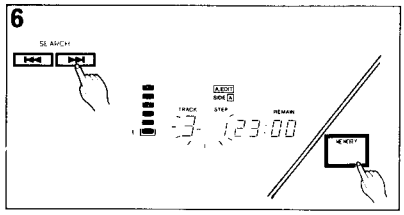


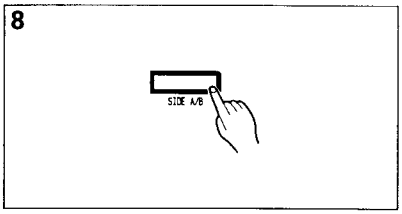


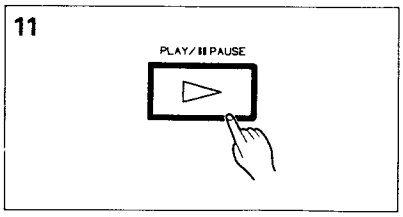












Note:

- **When the programing is in excess of the designated time interval, the excess time blinks in the display, which means no selection can be programmed anymore.**

HANDLING COMPACT DISCS AND MAGAZINE

■ How to handle CDs

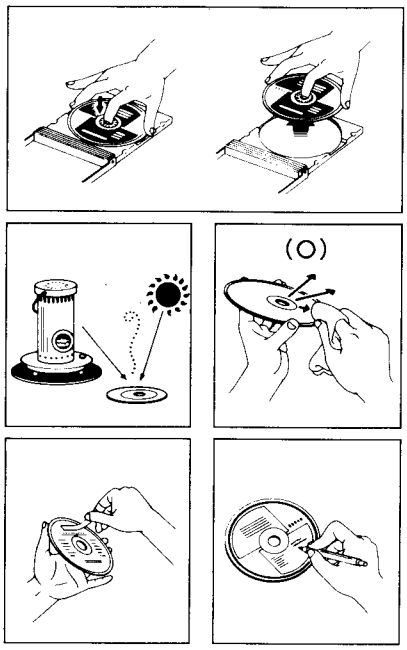
Since compact discs are made of plastic, they can be easily damaged; if the disc gets dirty, dusty, damaged or warped, the sound will not be picked up correctly, and such discs may cause the changer to malfunction. When handling compact disc, use the following precautions.

- Do not touch the surface of the disc (reflective silver i.e., the side without the label) when handling the discs.
- **Storage**
  Make sure to keep discs in their cases. If discs are piled on top of one another without cases, they can be damaged. Do not put discs in a location exposed to direct sunlight or in a place with high temperature and humidity.
  Avoid leaving discs in your car.
- **Maintenance of discs**
  When fingerprints and dirt adhere to a disc, wipe the disc off with a soft, dry cloth from the inside towards the outside.
  If it is difficult to clean, wipe the disc with a cloth moistened with water.
- Do not use record cleaners, benzine, alcohol or antistatic agent.
- Do not damage the label side or stick paper or adhesive to the surface.
- Please purchase the special magazine XC-M73 for use with 8cm (3") single compact discs.

■ How to handle the magazine

- Care in handling the magazine

1. Always keep the magazine loaded with six disc trays.
2. When removing or inserting disc trays, hold the magazine leveled.
3. Fill the magazine with compact discs placed on disc trays. Never put any single discs directly into the magazine.
4. After use, store the magazine in its case. Do not expose it to high temperature and direct sunlight.
5. Do not disassemble the magazine.
6. Take care not to drop or hit the magazine. Do not apply any strong pressure on the disc trays which have been removed from the magazine.
7. Never apply such solvents as benzine, thinner, and insecticide to the magazine or disc trays. These solvents may erode their surfaces.



TROUBLESHOOTING

What appears to be malfunction may not always be serious. Go through the following list before requesting service.

Sympton	Possible causes	Remedy
The magazine does not move out even when the [EJECT (⏏)] button is pressed.	• The power is not applied. • The magazine has not been loaded correctly. • While the CD changing drive is selecting a CD, the [EJECT (⏏)] button is pressed.	• Press the [POWER] button and apply the power to the CD changer. • Push the magazine all the way in, and press the [EJECT (⏏)] button again. • After the CD changing drive has stopped operation, press the [EJECT (⏏)] button again, and apply the power to the CD changer again to see if all troubles are remedied.
Nothing can be activated by pushing each operating button.	• Operating buttons are pressed in a hasty manner and repeatedly. • Operating buttons are pressed while the CD changing drive is selecting a disc.	• Turn off the power and turn on the power again. • After the CD changing drive stopped operation, press each operation button again.
• Selection on the CD has not been played.	• A CD is missing. • A CD has been placed upside down.	• Load a CD. • Place the CD with its label side up on the disc tray.
• Programming is not possible.	• The PROGRAM indicator is not turned on.	• Light the PROGRAM indicator by pressing the [PLAY MODE] button or [PROGRAM] button on the remote control unit. About how to program, see "How to Program and Play" on page 10.
• The sound is interrupted and therefore hard to hear.	• The CD has got dirty. • The CD has scratches. • The CD has been warped.	• Wipe off the surface of the CD with a dry and soft cloth. • Replace the defective CD with a new one. • Do not fold or heat the CD with such devices as a hair drier.

SPECIFICATIONS

System : Compact disc automatic changer
CD capacity : 6 discs in the magazine
Signal detection system : Non-contact optical system pickup
Number of channels : 2 channels
Frequency response : 2 Hz-20,000 Hz
Dynamic range : 95 dB (1 kHz)
S/N : 100 dB (at digital 0)
Channel separation : 90 dB (1 kHz)
Total harmonic distortion : 0.05% (1 kHz)
Wow and flutter : Less than measurable limit
Output level : 2.0 V rms (full scale)
Number of program steps : 32 steps

Dimensions : 360 (W) × 123 (H) × 376 (D) mm (14-3/16" × 4-7/8" × 14-13/16")
Weight : 4.5 kg (10.0 lbs)
Accessories : Magazine 1
Remote cable (1 m • 3.28 ft) 1
Signal cord (1 m • 3.28 ft) 1

Design and specifications subject to change without notice.

POWER SPECIFICATIONS

Areas	Line Voltage & Frequency	Power Consumption
U.S.A.	AC 120 V∿ , 60 Hz	15 watts
Canada		
Continental Europe	AC 220 V∿ , 50 Hz	
U.K.	AC 240 V∿ , 50 Hz	
Australia		
Other areas	AC 115-127/220-240 V∿ selectable, 50/60 Hz	

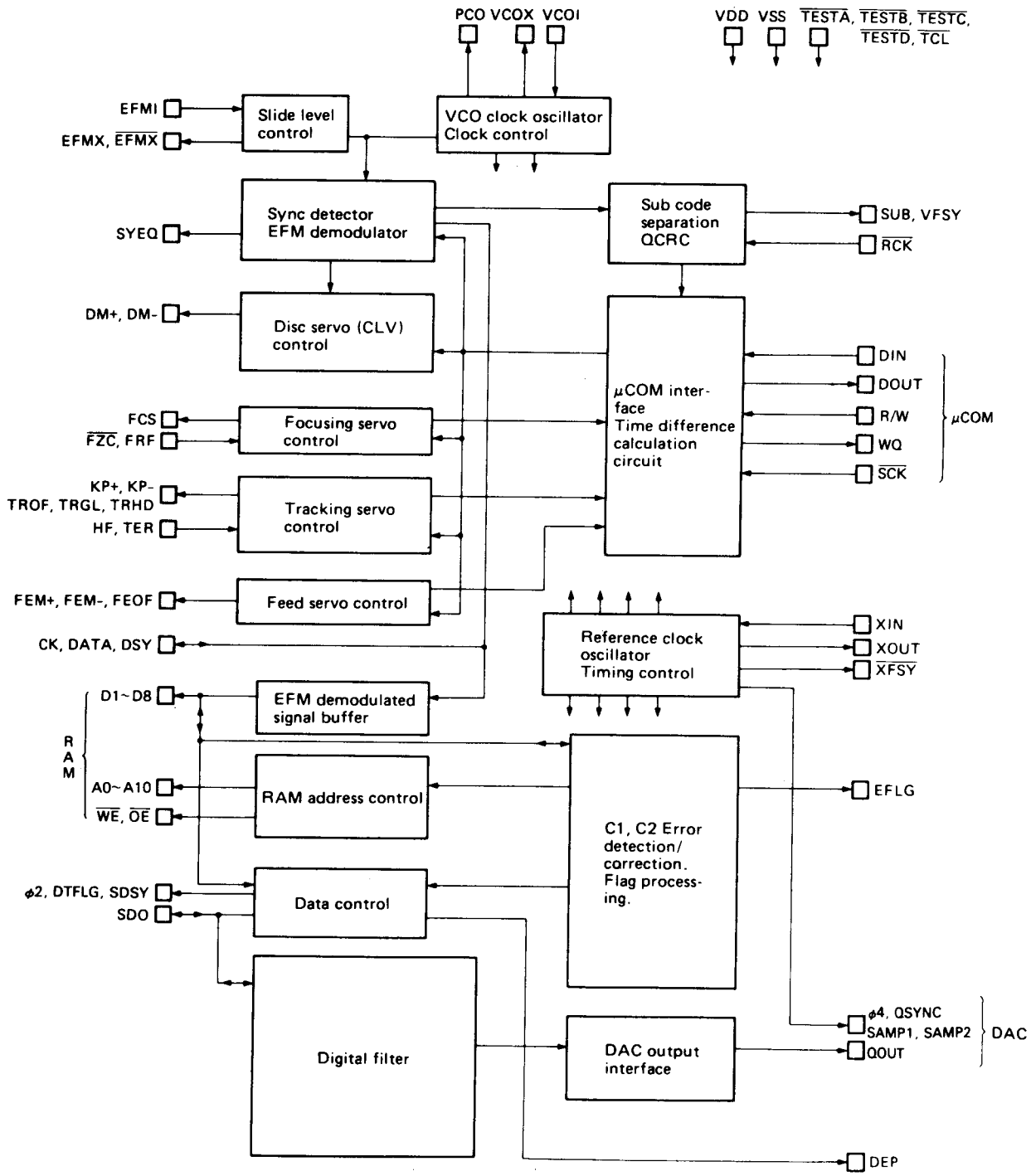
Description of Major ICs

■ IC401: YM3805-H or YM3805

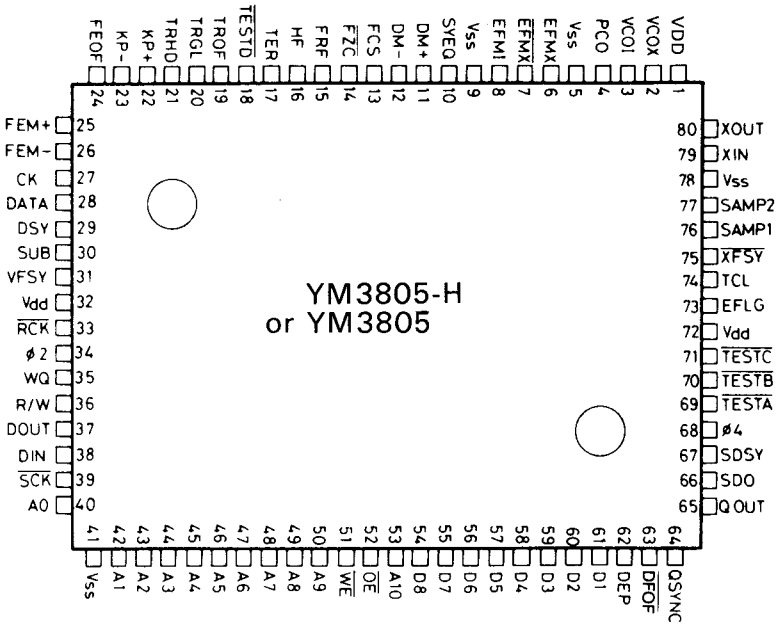
(1) Outline:

YM3805 is a C-MOS LSI for signal processing (SGP) and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the photo pickup, detection/correction of the error signal, signal processing in digital filtering, etc. and for various servo controls (focusing, disc, tracking and feed servos).

(2) Internal block diagram



(3) Terminal Layout



(4) Pin Functions

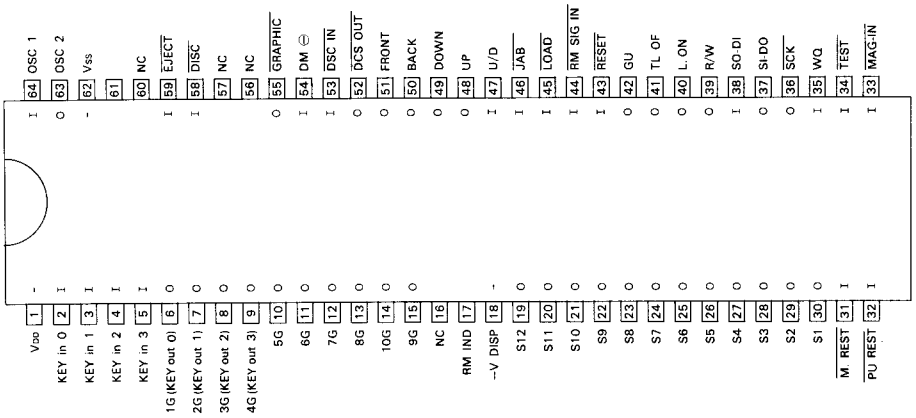
Pin No.	Pin Name	I/O	Function
1 32 72	VDD	—	These are +5 V power supply pins.
2 3	VCOX VCOI	O I	A clock pulse (approx. 8.6436 MHz) is generated when an LC resonance circuit is connected to these pins.
4	PCO	O	This pin outputs the phase difference between the clock and EFM pattern when polarity changes. Clock regeneration is enabled by setting the polarity of the variable-capacitance diode so that the frequency rises when it is positive (+).
5 9 41 78	Vss	—	These are ground pins.
6 7	EFMX $\overline{\text{EFMX}}$		These pins are connected to the EFM signal slice level control circuit. Amplitude-limited signals with opposite phases are generated.
8	EFMI	I	The EFM signal (1-2 Vp-p) is input to this pin.
10	SYEQ	O	This is the output pin for checking. It goes high when the sync signal detected in the EFM pattern matches the sync signal from the internal counter.
11 12	DM+ DM−	O O	These pins output PWM signals which are supplied to the spindle motor drive circuit. The spindle motor accelerates when the DM+ output is high, and decelerates when the DM- output is high. The two pins never go high at the same time.
13 14 15	FCS $\overline{\text{FZC}}$ FRF	O I+ I	These pins are used to control focus servo. The FCS signal activates the focusing operation. When the $\overline{\text{FZC}}$ signal, generated when the correct focus is obtained, is detected, the focusing operation is stopped, and the FCO flag drops internally in response to the FRF signal which is generated when reflected light is detected.

Pin No.	Pin Name	I/O	Function
16 17 19 20 21 22 23	HF TER TROF TRGL TRHD KP+ KP−	I I O O O O O	When the pickup moves across the tracks during searching operation, the amplitude variation of the generated HF signal is sampled at the zero-cross point of the tracking error signal TER, and the TROF signal is out put. The level change of this signal is used to turn the servo ON and OFF so that the target track can be detected easily. To activate track jump (kick) operation, the KP+ and KP− signals are output and during this period the TRHD signal is output to generate the tracking error signal. The TRGL signal is used to increase the tracking gain after track jump (kick) is completed.
24 25 26	FEOF FEM+ FEM−	O O O	The EFM+ or EFM− signal is output as a high-speed feed signal. During this period, the EFOF signal is output to interrupt the feed servo. All these pins go low in the normal play mode.
27	CK	I/O	This pin is the check pin. The CK signal is the clock frequency of approx. 4.3218 MHz, generated by halving the frequency of the VCO.
35	WQ	O	This pin is connected to the microcomputer. It outputs request signals when data is to be transferred from SPC to the microcomputer.
36	R/W	I	This pin is connected to the microcomputer. It is the input pin for switching the data transfer mode. Data is transferred from SPC to the microcomputer when it is low, and from the microcomuter to SPC when it is high.
37	DOUT	O	This pin is the data output pin connected to the microcomputer. Data is transferred from SPC to the microcomputer synchronized with the SCK clock input when the R/W signal is at high level.
38	DIN	I	This pin is the data output pin connected to the microcomputer. Data is transferred from the microcomputer to SPC synchronized with the $\overline{SCK}$ clock input when the R/W signal is at high level.
39	$\overline{SCK}$	I	This pin is connected to the microcomputer. It is the clock input pin required for data transfer.
40 42 〉 50 53	A0 A1 〉 A9 A10	O	These are the address output pins connected to the RAM.
51	$\overline{WE}$	O	This pin is connected to the RAM. When it goes low, the RAM enters the write mode.
52	$\overline{OE}$	O	This pin is connected to the RAM. When it goes low, the RAM enters the read mode.
54 〉 61	D8 〉 D1	I/O	These are the data input/output pins connected to the RAM. They are set to the output mode when the $\overline{WE}$ signal is at low level, and set to the input mode when it is at high level.
62	DEP	O	This outputs the frequency characteristics control signal. Deemphasis is required when it is at high level.
64 65 68 76 77	QSYNC QOUT ϕ4 SAMP1 SAMP2	O O O O O	QOUT, the serial output signal for D/A converter, is a 16-bit serial signal which is synchronized with the rising edge of the 4.3218 MHz clock (ϕ4), and is output in 2's complement format. SAMP1 and SAMP2 are deglitcher signals for the L and R channels respectively.
18 28 29 30 31 33 34 63 66 67 69 70 71 73 74 75	$\overline{TESTD}$ DATA DSY SUB VFSY RCK $\overline{\phi 2}$ $\overline{DFOF}$ SDO $\overline{SDSY}$ $\overline{TESTA}$ $\overline{TESTB}$ $\overline{TESTC}$ EFLC TCL $\overline{XFSY}$	O I/O I/O O O I+ O O I/O O I+ I+ O I+ I/O I+	These are not used in this unit.
79 80	X IN XOUT	I O	The clock frequency is generated when an 8.6436 MHz crystal oscillator is connected between the pins and 10 pF connected between GND and each pin.

■ MN178122JSW1(IC201)

(1) **Outline:** This LSI is 4-bit C-MOS single-chip microcomputer. It comprises a 12288 word x 10-bit ROM, and 608 digit x4-bit RAM, I/O, timer/counter, and a serial interface. Its major functions include accepting signals from each of the switch groups and outputting operational commands to the LED display and the servo control LSI.

(2) **Terminal Layout**

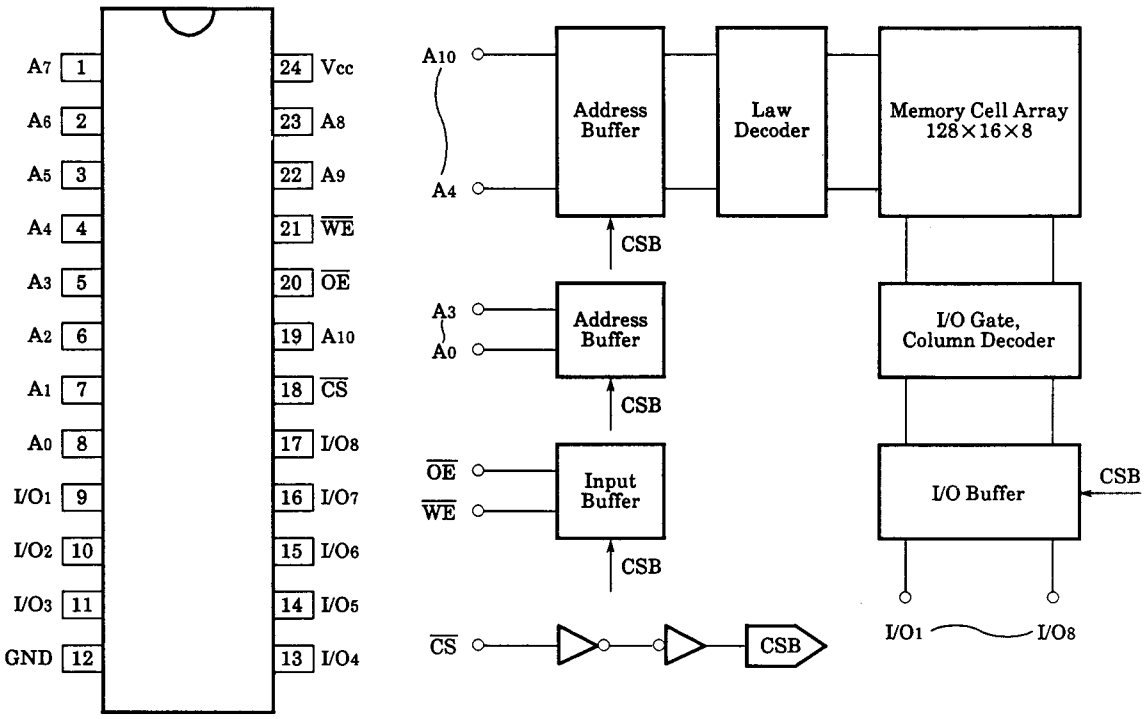


(3) **Function**

Pin No.	Pin Name	I/O	Function
1	V_{DD}	-	Positive power supply
2	KEY in 0	I	Key matrix input
3	KEY in 1	I	
4	KEY in 2	I	
5	KEY in 3	I	
6	1G (KEY out 0)	O	Grid drive signal (Key matrix output)
7	2G (KEY out 1)	O	
8	3G (KEY out 2)	O	
9	4G (KEY out 3)	O	
10	5G	O	Grid drive signal
11	6G	O	
12	7G	O	
13	8G	O	
14	10G	O	
15	9G	O	
16	NC		Non connection
17	RM IND		Non connection
18	-V DISP	-	Negative power supply for display
19	S12	O	Segment drive signal
20	S11	O	
21	S10	O	
22	S9	O	
23	S8	O	
24	S7	O	
25	S6	O	
26	S5	O	
27	S4	O	
28	S3	O	
29	S2	O	
30	S1	O	
31	$\overline{\text{M. REST}}$	I	"L" with mechanism at rest position
32	$\overline{\text{PU REST}}$	I	"L" with pickup at rest position

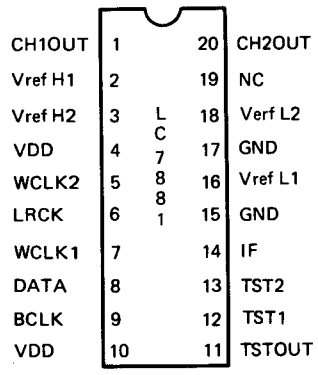
Pin No.	Pin Name	I/O	Function
33	$\overline{\text{MAG-IN}}$	I	Magazine in signal
34	$\overline{\text{TEST}}$	I	Entering test mode with TEST(L)
35	$\overline{\text{WQ}}$	I	Write request input from IC401
36	$\overline{\text{SCK}}$	O	Clock output to IC401
37	SI-DO	O	Serial data output to IC401
38	SO-DI	I	Serial data input from IC401
39	R/W	O	Read/write signal output
40	L.ON	O	Turns on laser
41	TL OF	O	Turns off tracking servo
42	GU	O	Increases tracking gain
43	$\overline{\text{RESET}}$	I	Reset signal input
44	$\overline{\text{RM SIG IN}}$	I	Remote control signal input
45	$\overline{\text{LOAD}}$	I	Disc load detect signal
46	$\overline{\text{JAB}}$	I	JAB switch signal
47	U/D	I	Height detection signal
48	UP	O	Lifter driving motor control
49	DOWN	O	Lifter driving motor control
50	BACK	O	Loading motor control
51	FRONT	O	Loading motor control
52	$\overline{\text{DCS OUT}}$	O	DCS signal output
53	$\overline{\text{DCS IN}}$	I	DCS signal input
54	DM⊖	I	Spindle signal input
55	$\overline{\text{GRAPHIC}}$	O	The sub code sync signal mute is turned on at "L". "L" only during play
56	NC		Non connection
57	NC		Non connection
58	$\overline{\text{DISC}}$	I	Disc height detect signal
59	$\overline{\text{EJECT}}$	I	Magazine eject signal
60	NC		Non connection
61			Pull down
62	Vss	-	GND
63	OSC 2	O	Clock oscillation output
64	OSC 1	I	Clock oscillation input

■ LC3517BS-15 or MB8416A-15L (IC402): Static RAM

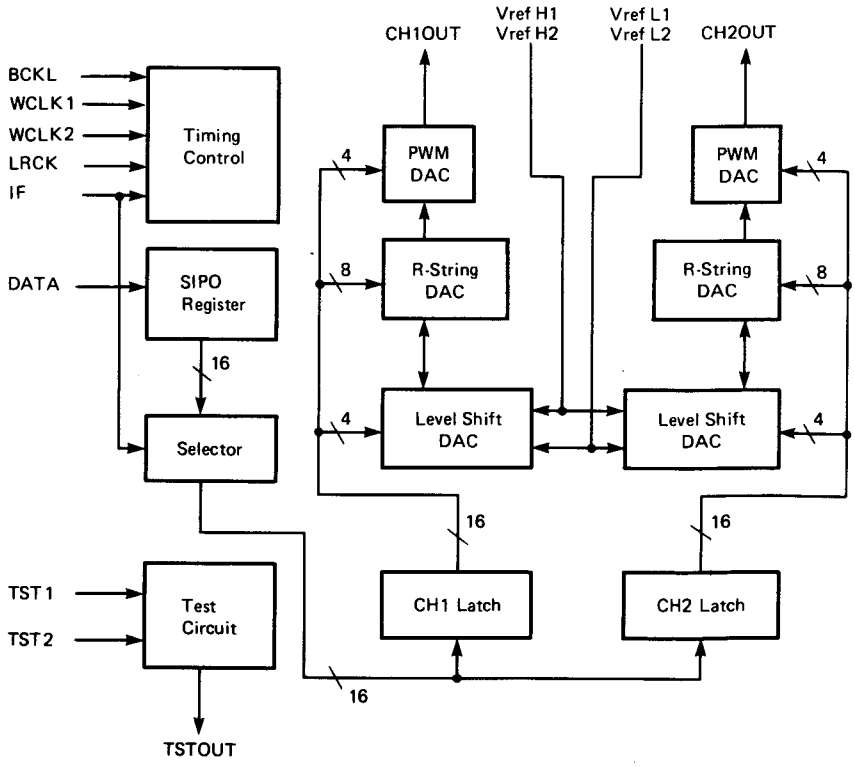


■ LC7881-C (IC703): D/A converter

(1) Terminal Layout



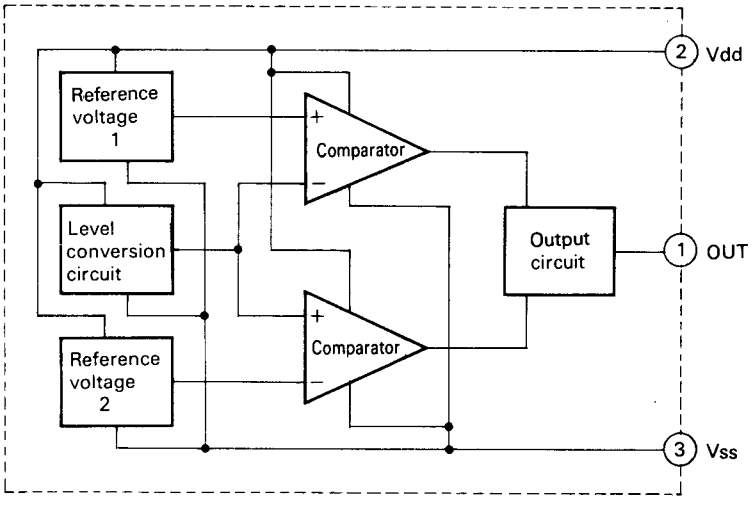
(2) Block Diagram



(3) Pin Functions

Pin No.	Pin Name	Function and Operation
1	CH1 OUT	CH1 Output pin
2	Vref H1	Reference voltage "H" input pin 1
3	Vref H2	Reference voltage "H" input pin 2
4	V_{DD}	Power voltage pin, +5 V
5	WCLK2	Word clock 2 input pin When IF pin is at high level, WCLK2 pin should be set at low level. When IF pin is at low level, this generates the internal signal used to latch the CH1 data of the digital audio signal, using the falling edge of WCLK2.
6	LRCK	LR clock input pin. This shows the CH1 and CH2 of the input digital audio data. When LRCK is at high level, it corresponds to CH1 data. When LRCK is at low level, it corresponds to CH2 data.
7	WCLK1	Word clock input pin. When IF pin is at high level, this pin generates the internal signal used to latch both the CH1 and CH2 data, using the falling edge of WCLK1. When IF pin is at low level, it generates the internal signal used to latch the CH2 data.
8	DATA	Digital audio data input pin. When IF pin is at high level, the data signal is input by each bit serially from the MSB. When IF pin is at low level, the data signal is input by each bit serially from the LSB.
9	BCLK	Bit clock pin. This clock signal is used when reading the digital audio data by each bit serially, and also used for PWM D/A converter.
10	V_{DD}	Power voltage pin, +5 V
11	TST OUT	Test signal output pin. Normally leave this pin open.
12	TST1	Test signal output pin. Normally connect to GND terminal.
13	TST2	
14	IF	Interface select pin. When IF pin is at high level, the digital audio data is input from the MSB first. When IF pin is at low level, the digital audio data is input from the LSB first.
15	GND	GND pin.
16	Vref L1	Reference voltage "L" input pin 1.
17	GND	GND pin.
18	Vref L2	Reference voltage "L" input pin 2.
19	NC	No connection.
20	CH2 OUT	CH2 output pin.

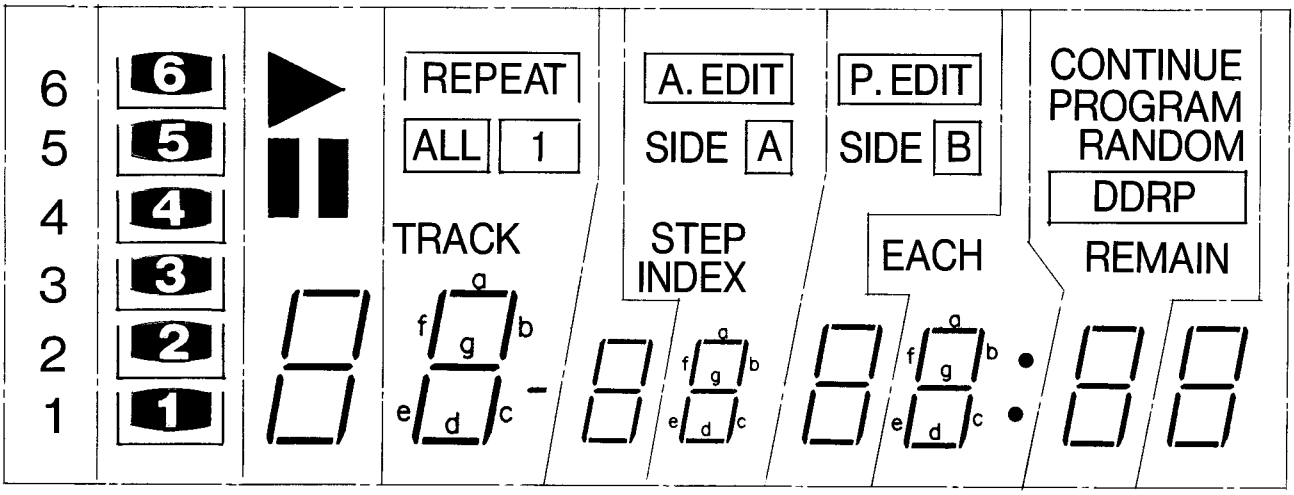
■ MN1281 or MN1280 (IC202):RESET IC



Internal Connections for the FL Display Tube

■ FL201 : ELU0001 - 078

(1) Grid Layout



(2) Pin Connections

TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ELECTRODE	F	F	NP	10G	NC	9G	S12	S11	8G	S10	S9	S8	7G	NC	6G	NC

TERMINAL No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
ELECTRODE	S7	5G	S6	S5	4G	S4	3G	S3	S2	2G	S1	1G	NC	NP	F	F

Notes 'F : Filament
G : Grid
P : Anode
NP : No Pin
NC : No Connection

(3) Anode Connection Table.

	10G	9 G	8 G	7 G	6 G	5 G	4 G	3 G	2 G	1 G
S 1		6	▶	REPEAT		A.EDIT	P.EDIT		CONTINUE	
S 2		5	❚❚	ALL		SIDE A	SIDE B		PROGRAM	
S 3		4		1		STEP		EACH	RANDOM	
S 4		3		TRACK		INDEX		:	DDRP	
S 5		2		▬					REMAIN	
S 6		1	a	a	a	a	a	a	a	a
S 7	6	(6)	b	b	b	b	b	b	b	b
S 8	5	(5)	f	f	f	f	f	f	f	f
S 9	4	(4)	g	g	g	g	g	g	g	g
S10	3	(3)	c	c	c	c	c	c	c	c
S11	2	(2)	e	e	e	e	e	e	e	e
S12	1	(1)	d	d	d	d	d	d	d	d

Disassembly Procedure.

(1) Removing the top cover.

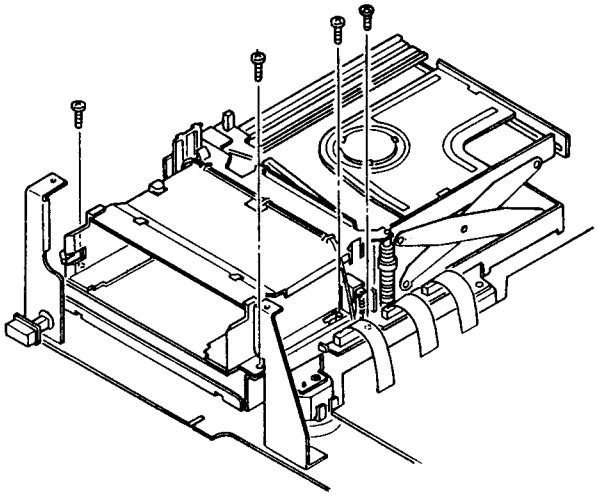
1. Remove four screws fastening both sides of the top cover, and two screws fastening the rear side.
2. Open both sides slightly outward and slowly lift the top cover straight upward holding the side of the rear panel.

(2) Removing the front panel.

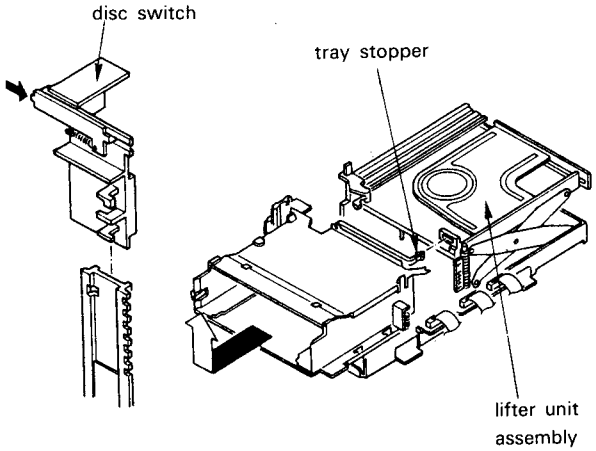
1. Remove the top cover.
2. Remove three screws fastening the top of the front panel, and three screws fastening the bottom.

(3) Removing the magazine holder.

1. Remove the front panel.
2. Remove three screws fastening the magazine holder.
3. Remove the seven pin connector board.



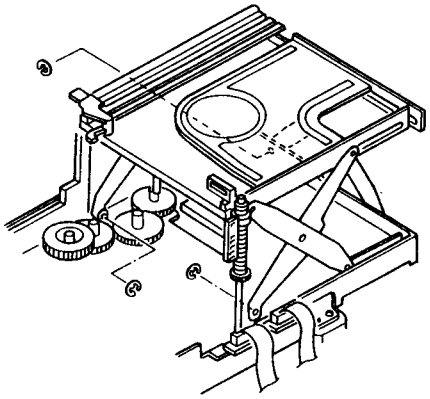
4. Slide the holder toward you and remove it.
5. Lift the lifter unit assembly and remove the tray stopper.



6. Disconnect the disc switch while lifting the lifter unit assembly.

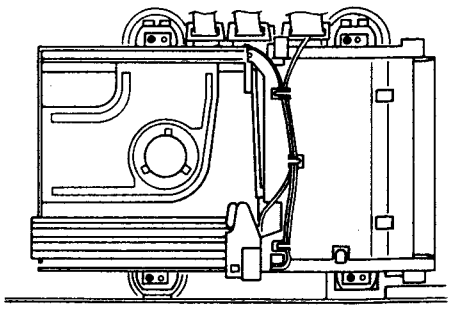
(4) Removing the lifter unit assembly

1. Remove the magazine holder.
2. Lift the lifter unit assembly to the top position.
3. Remove three E washers.

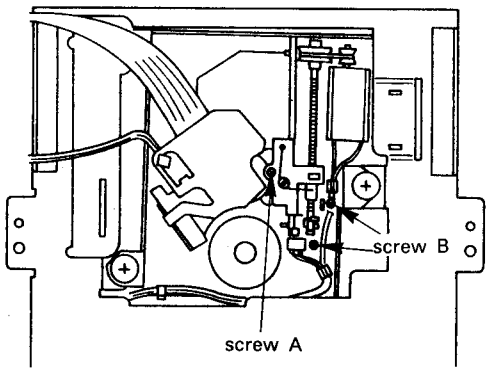


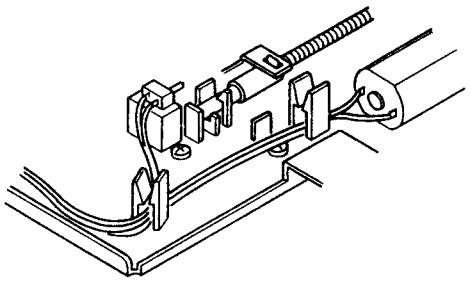
(5) Exchanging the pickup

1. Remove the top cover.
2. Remove the front panel.
3. Remove the four screws fastening the mechanism assembly.



4. Turn over the set(the bottom up).
5. Remove the screw A.
6. Remove the screw B.

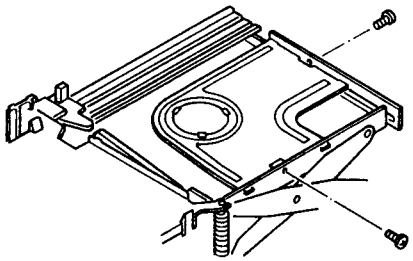




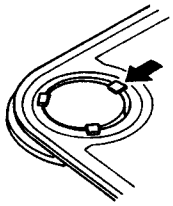
Note : Be careful not to hurt the codes while removing the screws.

(6) Removing the stabilizer

1. Remove the top cover.
2. Remove two screws and the stabilizer bracket while holding up the mechanism assembly.

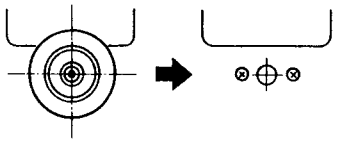


3. Remove pawls and the stabilizer from the stabilizer holder.



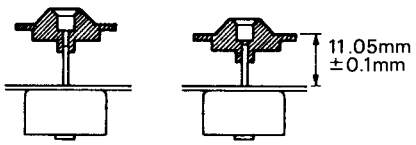
(7) Removing the spindle motor

1. Remove the top cover.
2. Remove the stabilizer bracket.
3. Remove the pressed-in turntable.
4. Remove two screws fastening the motor.



(8) Mounting the spindle motor.

1. Fasten two screws with well-balanced torque.
2. Press in the turntable.While pressing in, push up rightly the center of the turntable and adjust the height from the mechanism base to the top of the turntable to be 11.05 mm ± 0.1 mm.



Pickup Replacement Procedures

Make sure the power switch is turned off and unplug the power cord from the outlet.

↓

Replace the pickup.
(Refer to "Laser pickup removal" above and the photo below.)

↓

Plug in the power cord and turn on the power switch. Check if the laser lights and the objective lens moves up and down within approximately 3 seconds.
Note: Laser light is dangerous and should never be observed directly.

↓

Play a disk and short between TP2 ($\overline{\text{TEST}}$) and GND when the disk starts to rotate.

↓

Adjust the tracking gain.

↓

Adjust the tracking offset.

↓

Remove the short between TP2 ($\overline{\text{TEST}}$) and GND.

↓

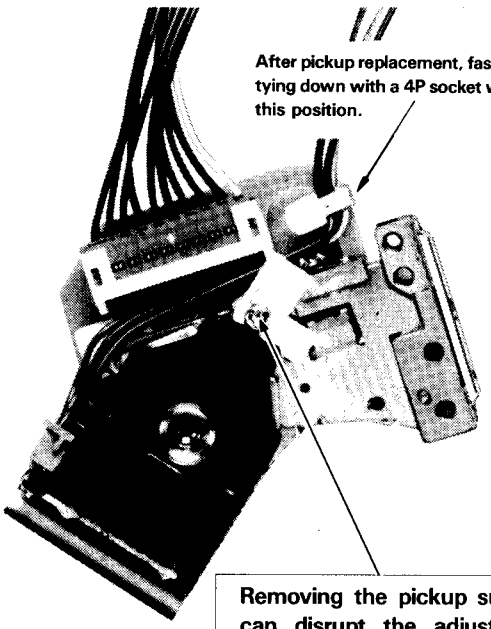
Check if an eye pattern waveform can be observed at TP4 (RF).

NOTE

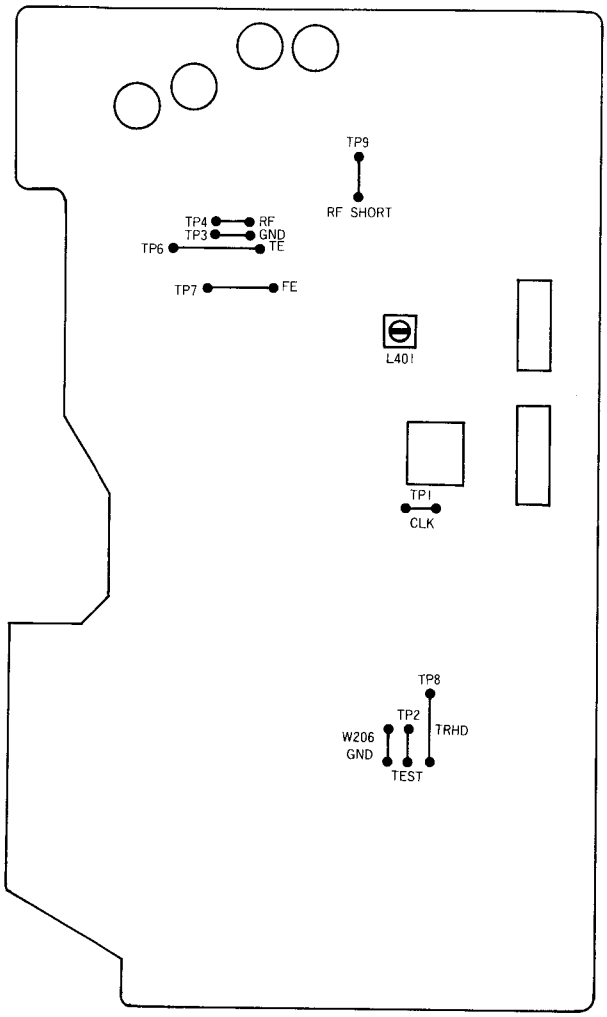
↓

End of replacement

Note: All adjustments have mutual influence and should be repeated 2 ~ 3 times.


After pickup replacement, fasten by tying down with a 4P socket wire at this position.
Removing the pickup support can disrupt the adjustment; therefore, never touch this screw.

Adjustment Procedures



(1) PLL free-run adjustment

Note: Perform this adjustment immediately after turning on the power.

1) Adjustment apparatus
   Frequency counter
2) Adjustment procedure
   1. Connect the frequency counter between TP1(CLK) and GND on the main PCB.
   2. Short between TP9 (RF short) and GND
   3. Use the adjustment rod and adjust L401 so that the frequency counter indicates 4.320±0.002MHz.

(2) Tracking gain adjustment

1) Adjustment apparatus
   Oscilloscope, normal disk
2) Adjustment procedure
   1. Connect the oscilloscope between TP6 (TE) and TP3 (GND) on the main PCB.
   2. Play the disk.
   3. Short between TP2($\overline{\text{TEST}}$) and W206(GND)
   4. Adjust R505 so that the tracking error signal (waveform on the oscilloscope) is 2.0 Vp-p.

(3) Tracking offset adjustment

1) Adjustment apparatus
   Oscilloscope, normal disk
2) Adjustment procedure
   1. Connect the oscilloscope between TP6 (TE) and TP3 (GND) on the main PCB.
   2. Play the disk.
   3. Short between TP2 ($\overline{\text{TEST}}$) and W206(GND).
   4. Adjust R509 so that the tracking error signal (waveform on the oscilloscope) DC level is 0.

Note: Adjust R509 so that the waveform is vertically symmetrical in relation to the 0 level.

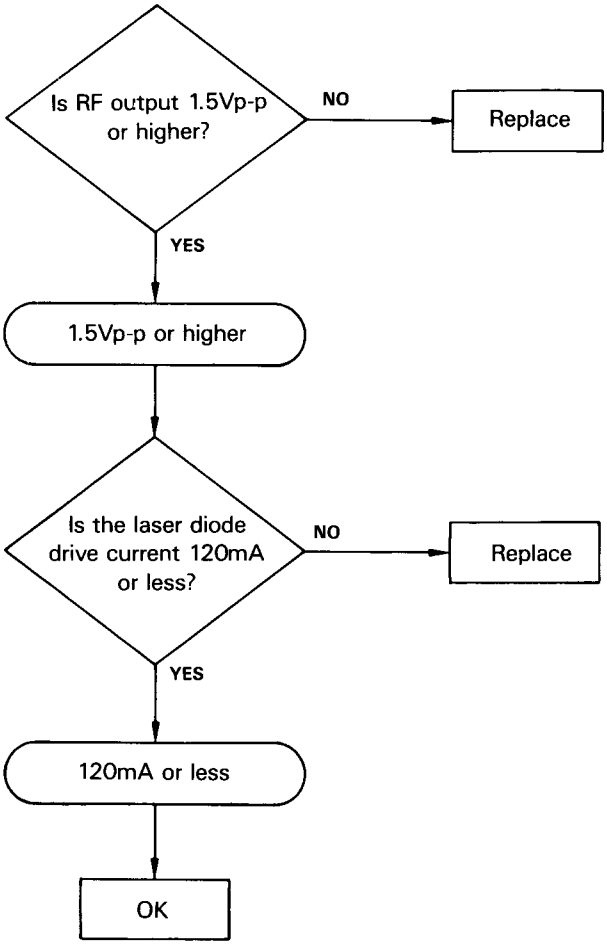
Pickup Maintenance Procedures

(1) Laser diode life check

The following symptoms indicate when the laser diode has reached the end of its service life.

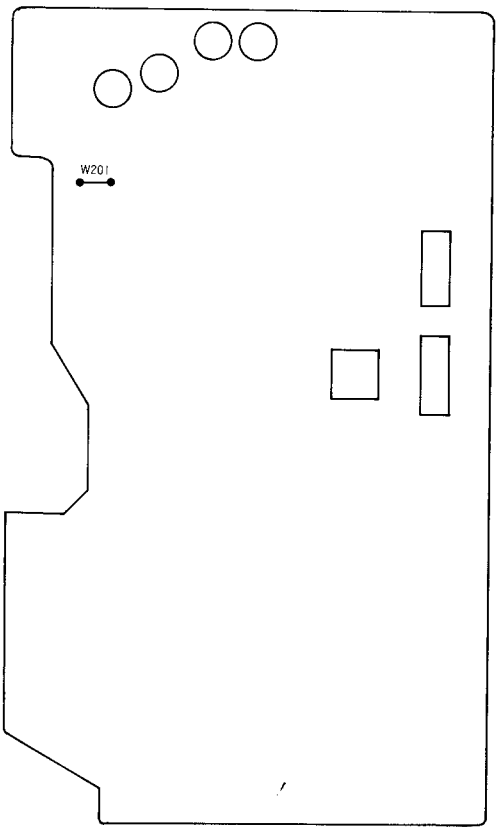
① RF output (EFM output, eye pattern oscillation) drops.
② The drive current required to light the laser diode increases.

Use the following flowchart to check if the laser diode has reached the end of its service life.



(2) Laser diode drive current measurement method

Cut the jumper wire (W201) shown in the illustration to the right using nippers and solder a 1 Ω resistor in its place. Connect a milli-voltmeter to the ends of the resistor and measure the voltage. If the voltage is 120mV or more, the laser diode has reached the end of its service life.



(3) The semi-fixed resistor on the APC PCB

The semi-fixed resistor mounted on the APC PCB where the pickup is installed is for use in adjusting the laser power. This adjustment must be made together with adjustment of the optical block characteristics; **therefore, never touch the semi-fixed resistor.**

If the laser power should become low, the laser diode has reached the end of its service life and the pickup must be replaced. Turning the semi-fixed resistor of a normal pickup can result in overcurrent and pickup damage.

Operation check by each switch.

S801 : Magazine eject switch.
When a magazine is ejected, the switch is turned on.

S802 : Magazine in switch.
When a magazine is inserted, the switch is turned on.

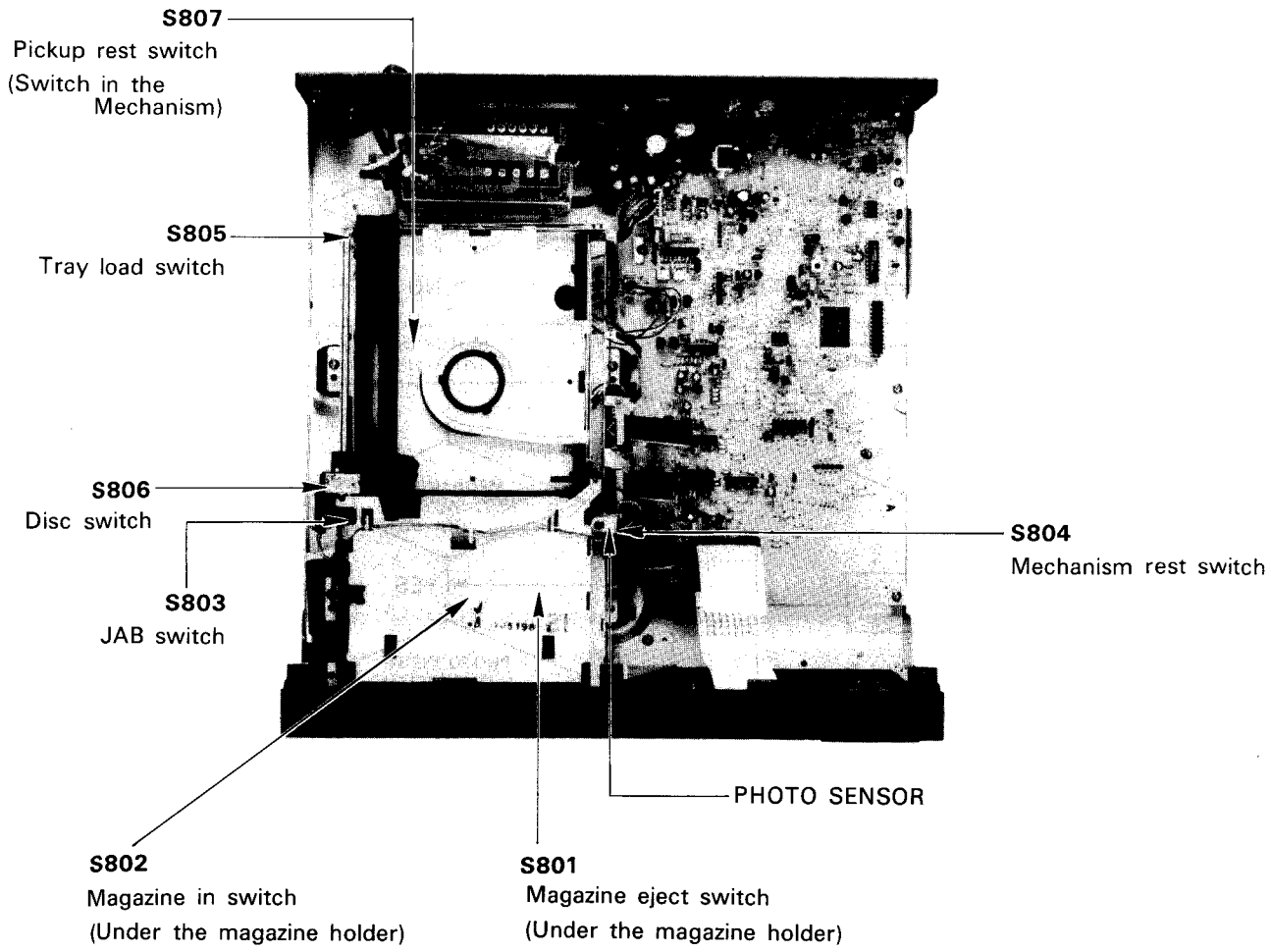
S803 : JAB switch.
When drive plate comes toward, the switch is turned on. (the switch is turned on only in a moment)

S804 : Mechanism rest switch.
When the mechanism comes to the initial height, the switch is turned on.

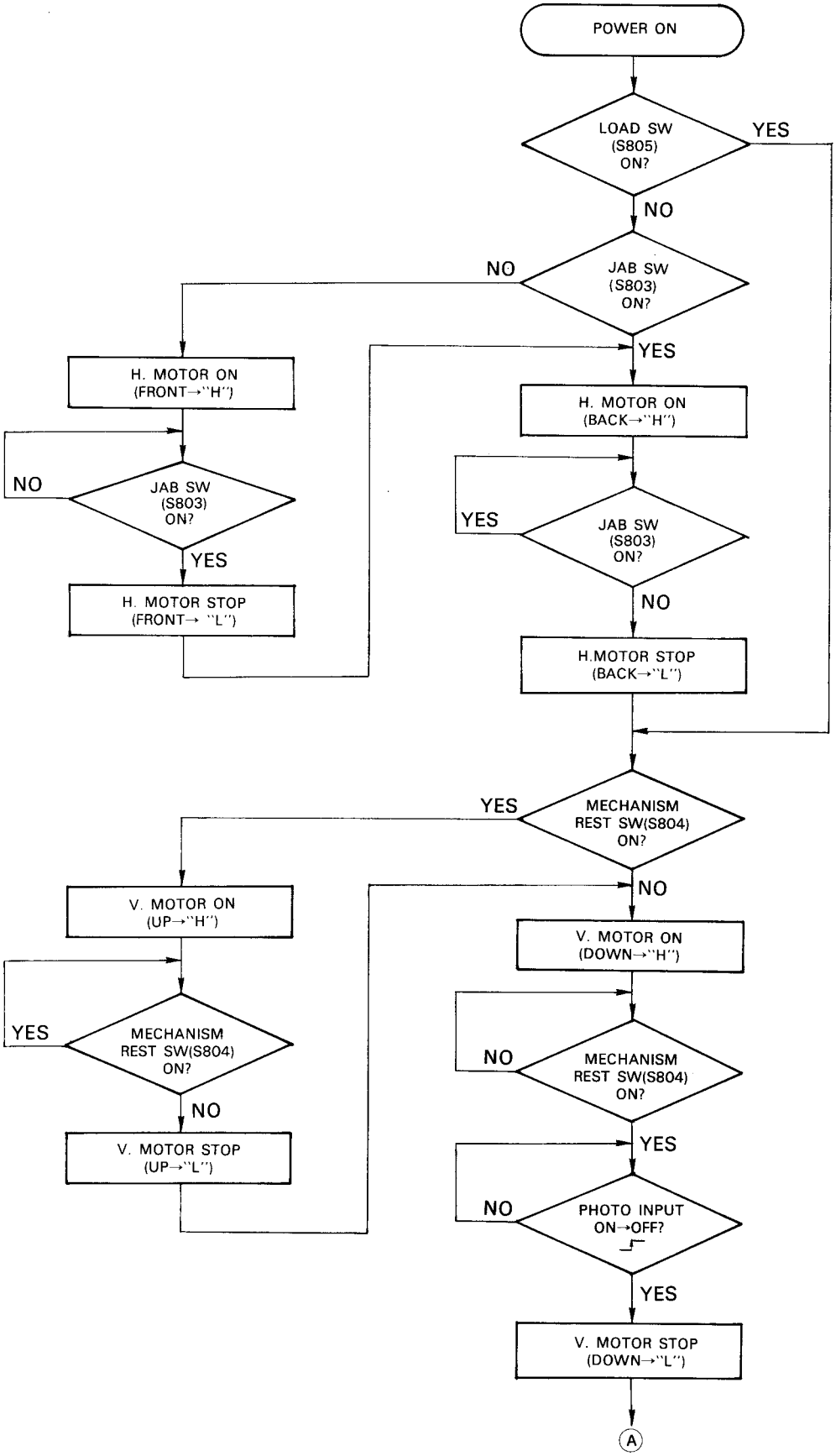
S805 : Tray load switch.
When the tray of a disc is set, the switch is turned on.

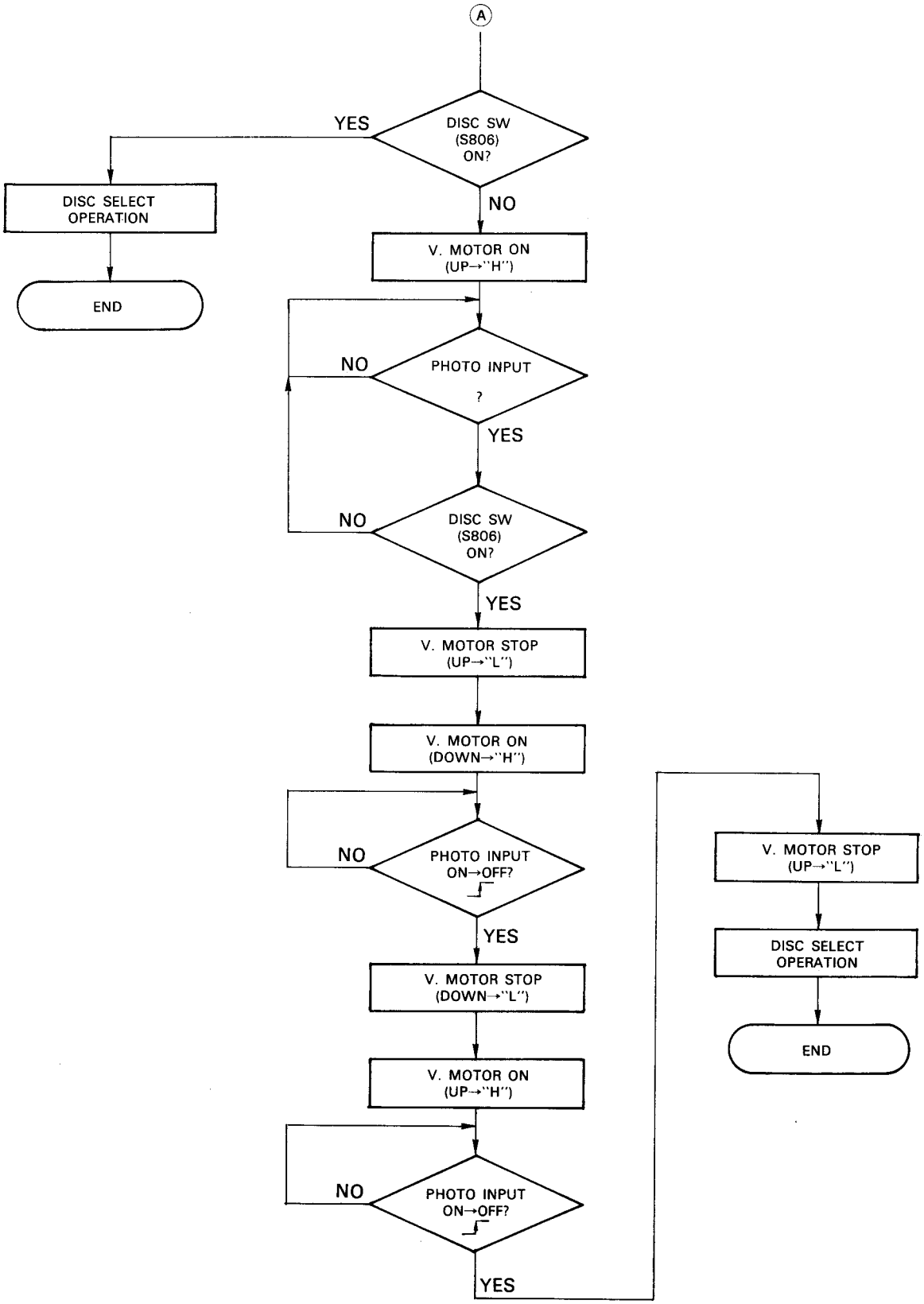
S806 : Disc switch.
The heigh of the tray is detected by whether the switch is ON or OFF.

S807 : Pickup rest switch.
When pickup comes to the initial position, the switch is turned on.

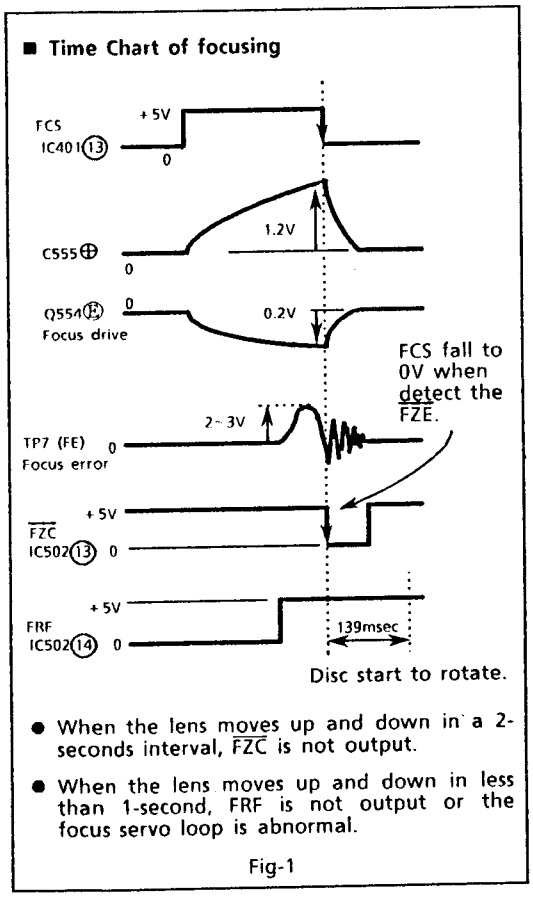


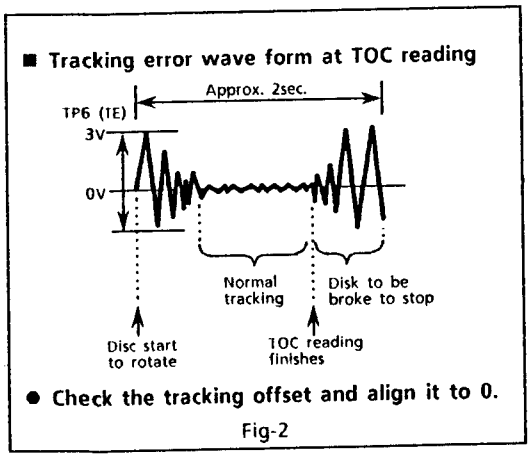
Initial Operation of Mechanism

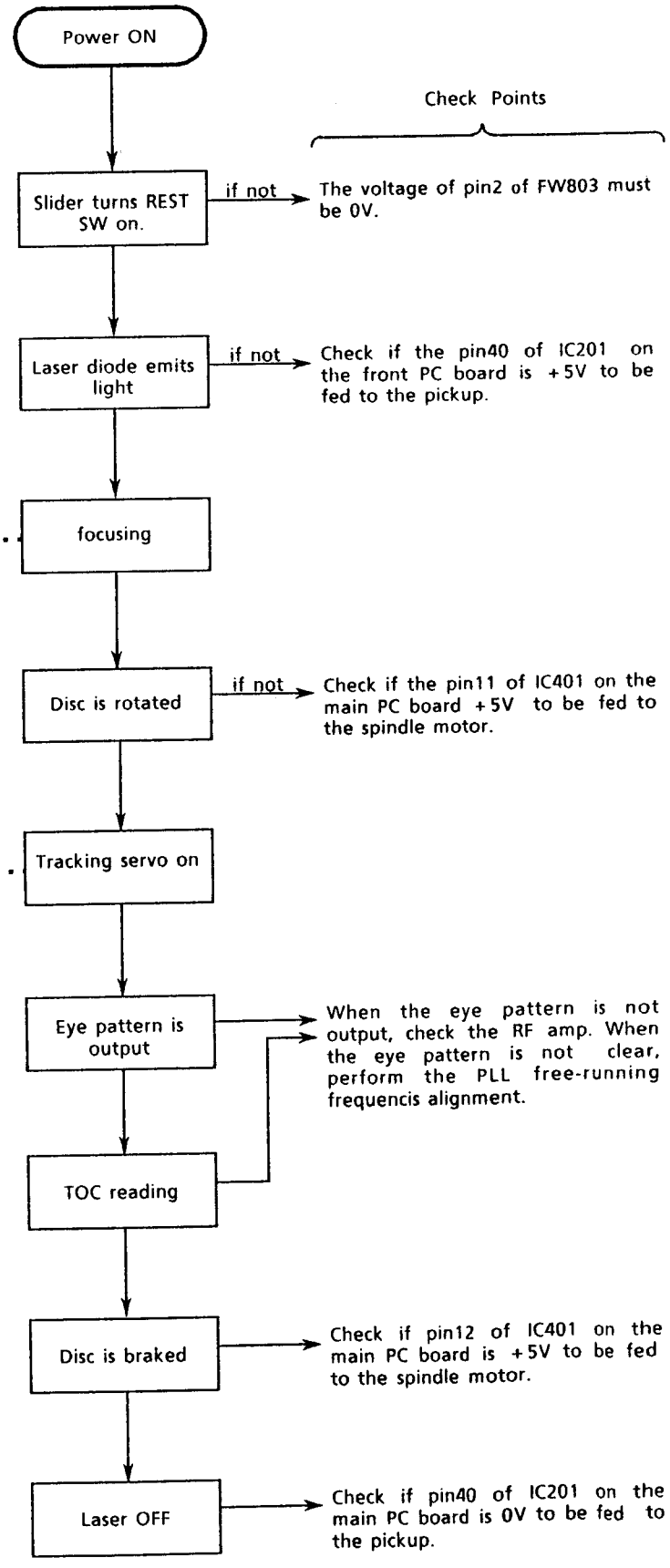



A
DISC SW (S806) ON?
YES
DISC SELECT OPERATION
END
NO
V. MOTOR ON (UP→"H")
PHOTO INPUT ?
NO
YES
DISC SW (S806) ON?
NO
YES
V. MOTOR STOP (UP→"L")
V. MOTOR ON (DOWN→"H")
PHOTO INPUT ON→OFF?
NO
YES
V. MOTOR STOP (DOWN→"L")
V. MOTOR ON (UP→"H")
PHOTO INPUT ON→OFF?
NO
YES
V. MOTOR STOP (UP→"L")
DISC SELECT OPERATION
END

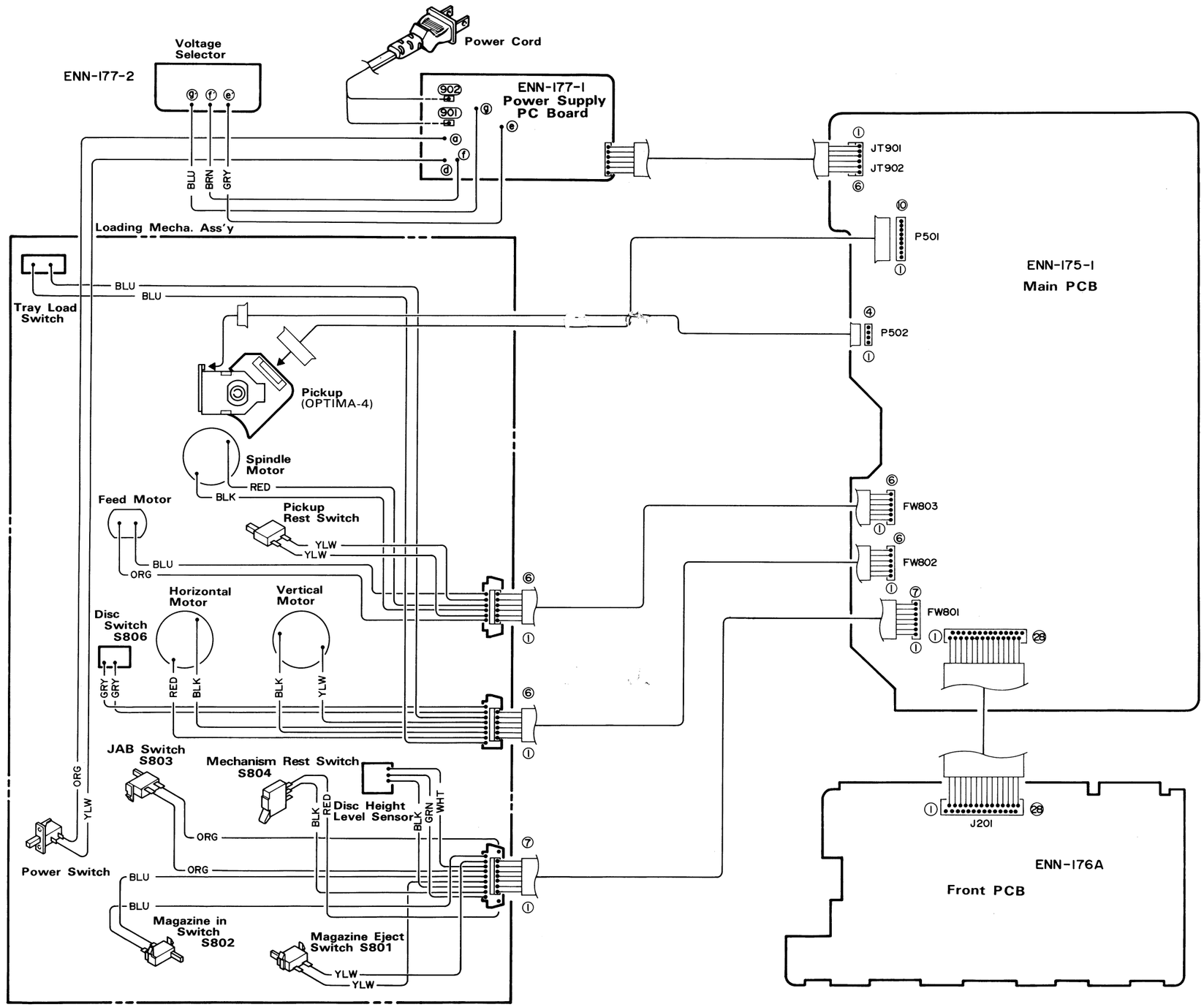
Flow of Functional Operation Until TOC is Read



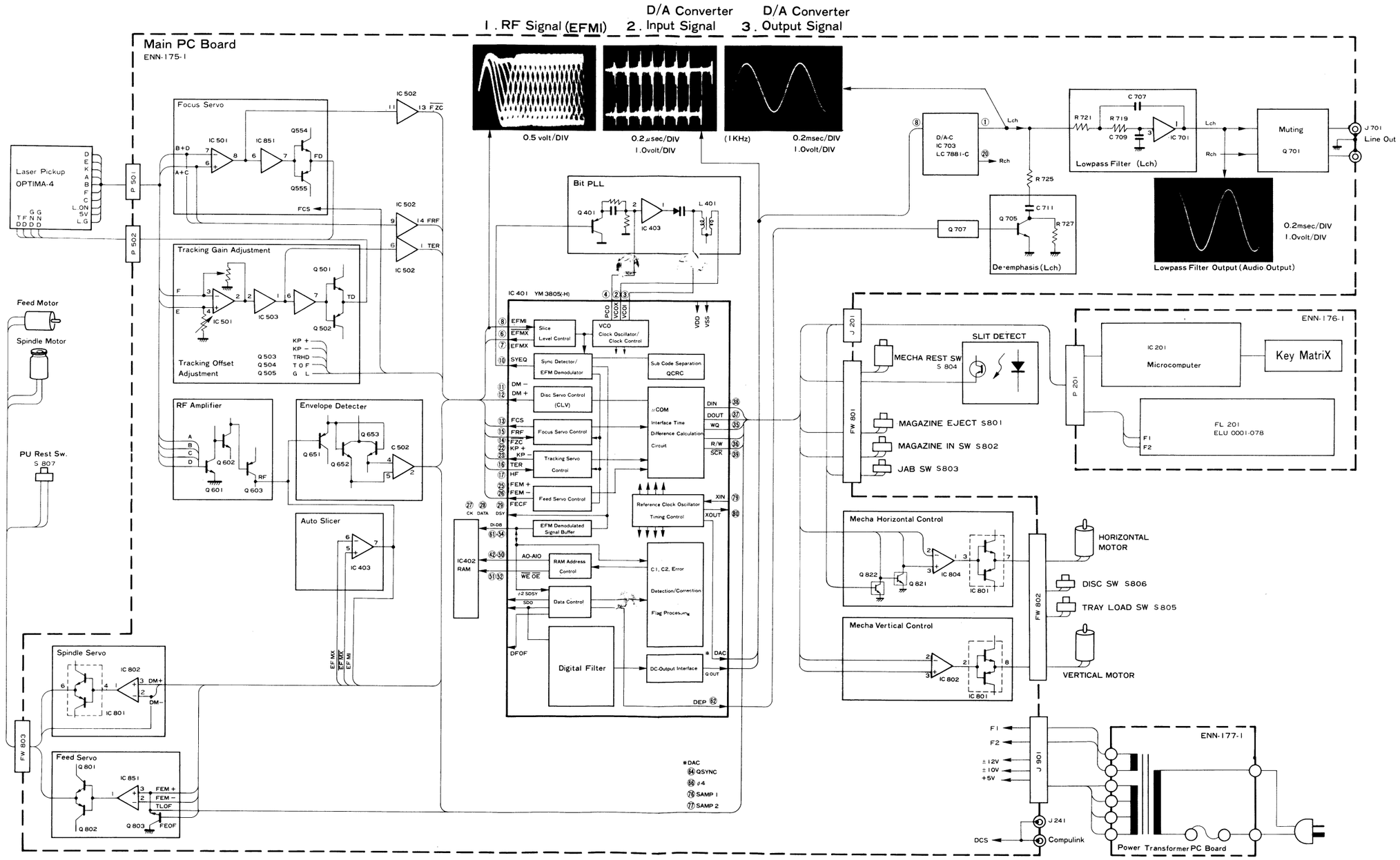



Power ON
Check Points
Slider turns REST SW on.
if not
The voltage of pin2 of FW803 must be 0V.
Laser diode emits light
if not
Check if the pin40 of IC201 on the front PC board is +5V to be fed to the pickup.
focusing
Disc is rotated
if not
Check if the pin11 of IC401 on the main PC board +5V to be fed to the spindle motor.
Tracking servo on
Eye pattern is output
When the eye pattern is not output, check the RF amp. When the eye pattern is not clear, perform the PLL free-running frequencis alignment.
TOC reading
Disc is braked
Check if pin12 of IC401 on the main PC board is +5V to be fed to the spindle motor.
Laser OFF
Check if pin40 of IC201 on the main PC board is 0V to be fed to the pickup.

Connection Diagrams

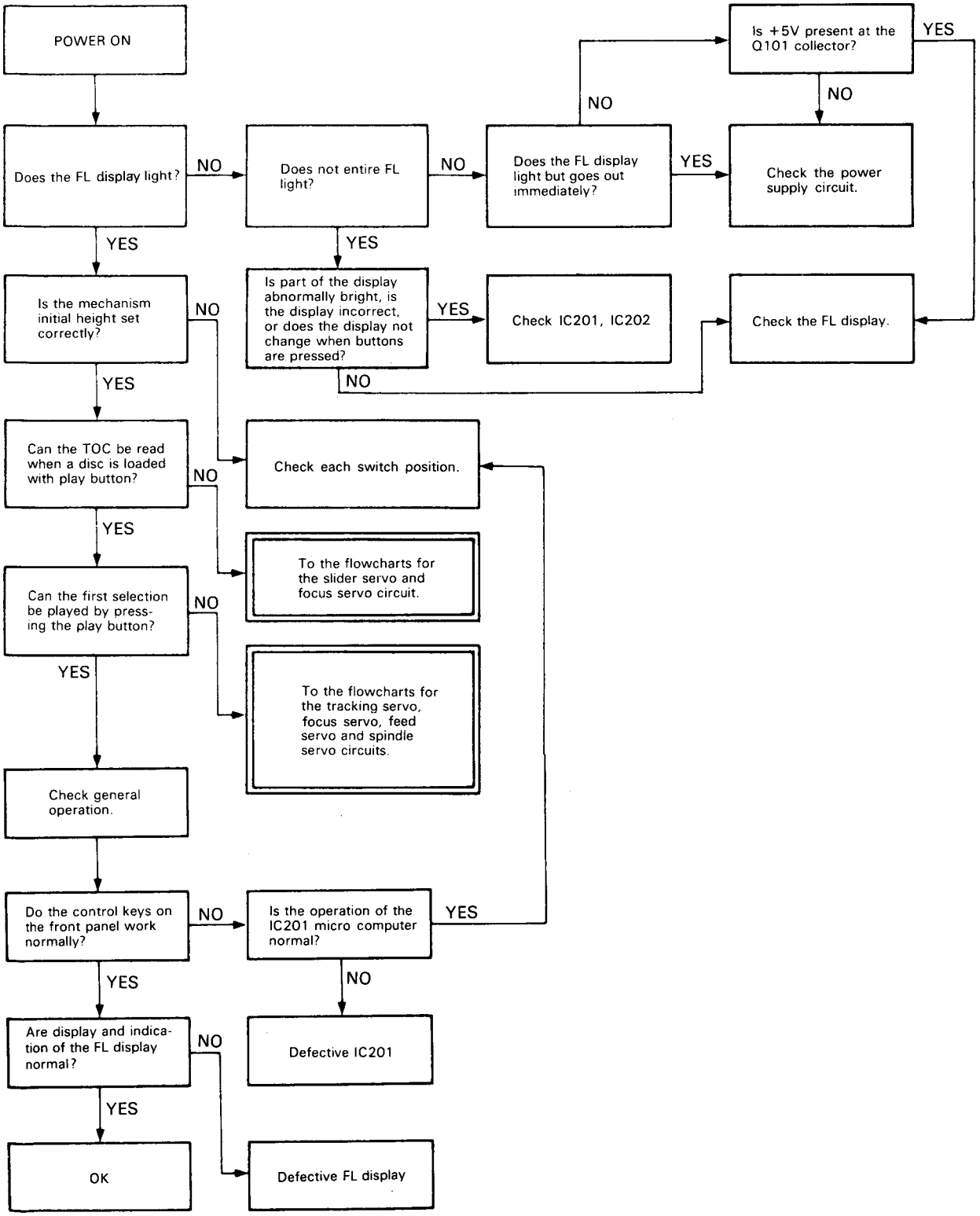


Block Diagrams

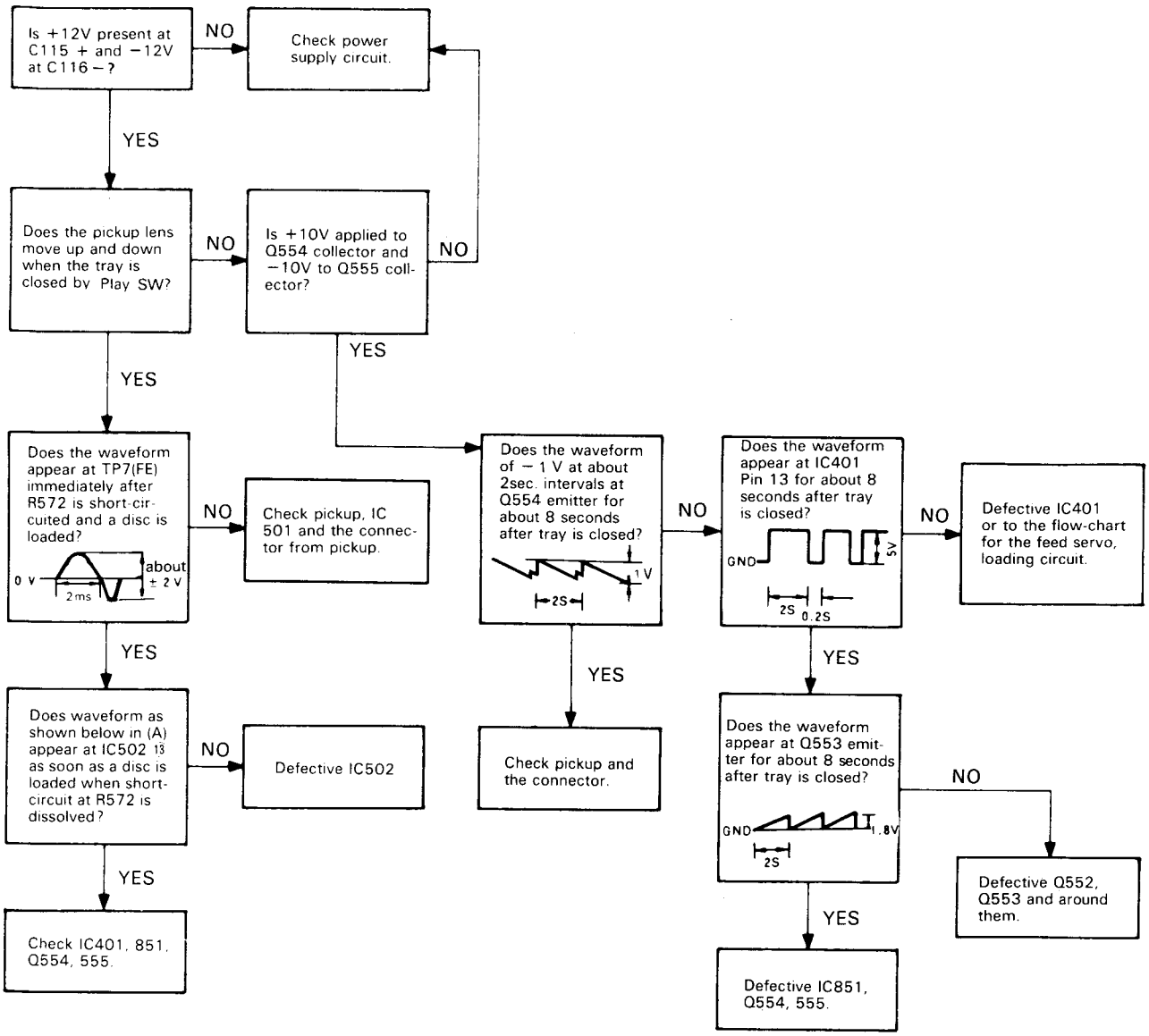


Troubleshooting

The flowcharts below show the procedure to find the causes of a problem.

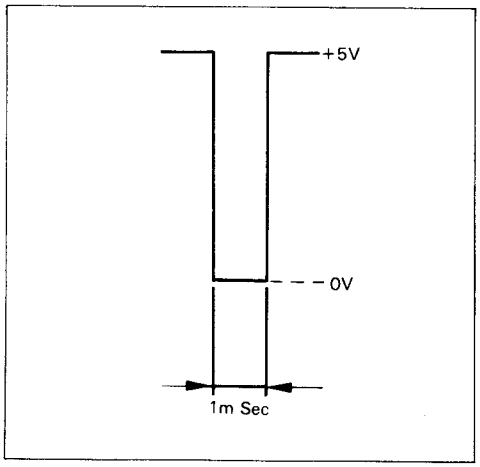

POWER ON
Does the FL display light?
NO
Does not entire FL light?
NO
Does the FL display light but goes out immediately?
YES
Check the power supply circuit.
Is +5V present at the Q101 collector?
YES
NO
NO
YES
YES
Is the mechanism initial height set correctly?
NO
Is part of the display abnormally bright, is the display incorrect, or does the display not change when buttons are pressed?
YES
Check IC201, IC202
Check the FL display.
NO
YES
Can the TOC be read when a disc is loaded with play button?
NO
Check each switch position.
YES
Can the first selection be played by pressing the play button?
NO
To the flowcharts for the slider servo and focus servo circuit.
YES
To the flowcharts for the tracking servo, focus servo, feed servo and spindle servo circuits.
Check general operation.
Do the control keys on the front panel work normally?
NO
Is the operation of the IC201 micro computer normal?
YES
YES
NO
Are display and indication of the FL display normal?
NO
Defective IC201
YES
OK
Defective FL display

Focus Servo Circuit

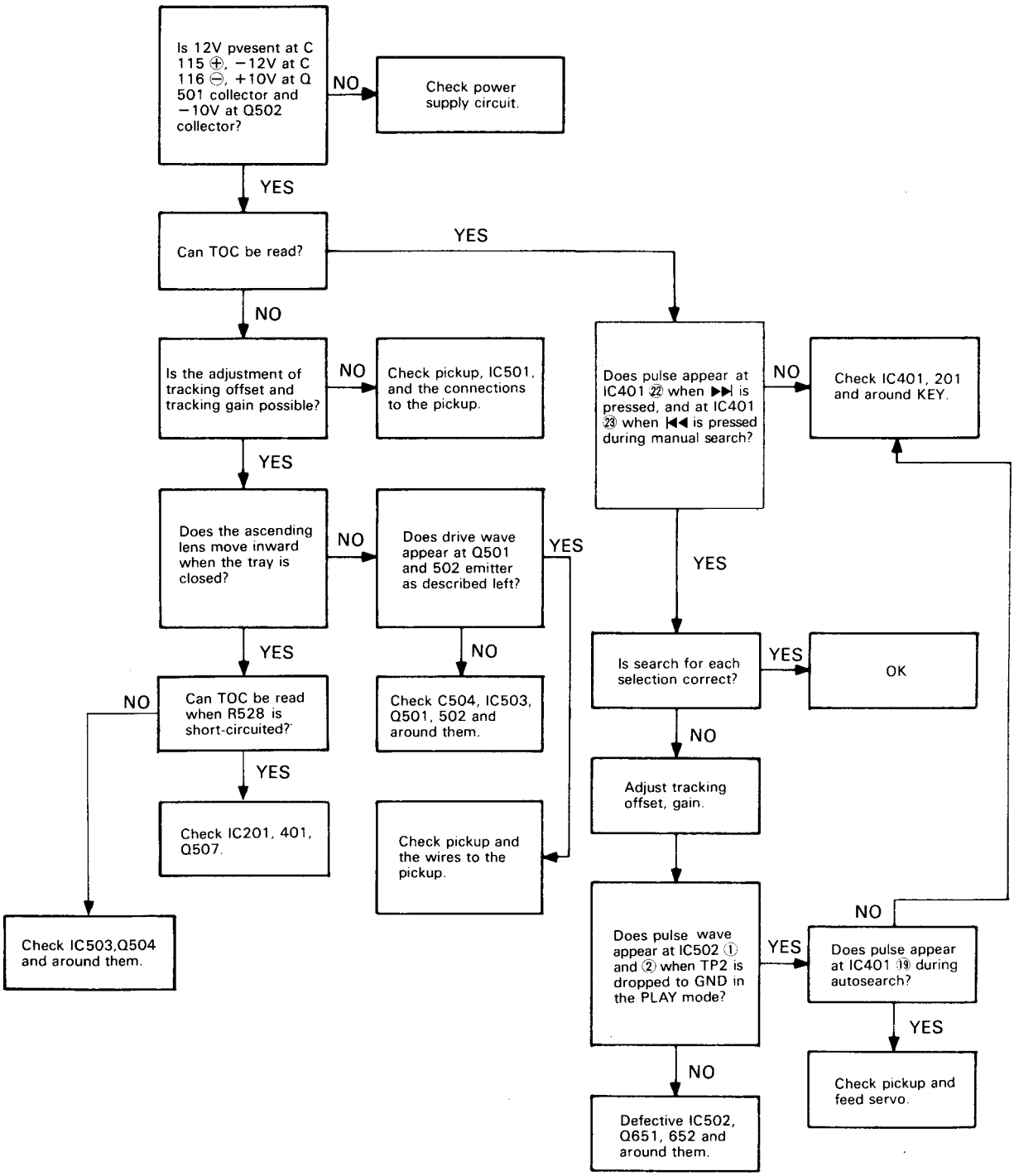

Is +12V present at C115 + and −12V at C116 −?
NO
Check power supply circuit.
YES
Does the pickup lens move up and down when the tray is closed by Play SW?
NO
Is +10V applied to Q554 collector and −10V to Q555 collector?
NO
YES
YES
Does the waveform appear at TP7(FE) immediately after R572 is short-circuited and a disc is loaded?
0 V
about ± 2 V
2 ms
NO
Check pickup, IC 501 and the connector from pickup.
YES
Does waveform as shown below in (A) appear at IC502 13 as soon as a disc is loaded when short-circuit at R572 is dissolved?
NO
Defective IC502
YES
Check IC401, 851, Q554, 555.
Does the waveform of − 1 V at about 2sec. intervals at Q554 emitter for about 8 seconds after tray is closed?
1 V
2S
NO
YES
Check pickup and the connector.
Does the waveform appear at IC401 Pin 13 for about 8 seconds after tray is closed?
GND
5V
2S
0.2S
NO
Defective IC401 or to the flow-chart for the feed servo, loading circuit.
YES
Does the waveform appear at Q553 emitter for about 8 seconds after tray is closed?
GND
1.8V
2S
NO
Defective Q552, Q553 and around them.
YES
Defective IC851, Q554, 555.

(A) Focus zero-cross waveform when play is started.

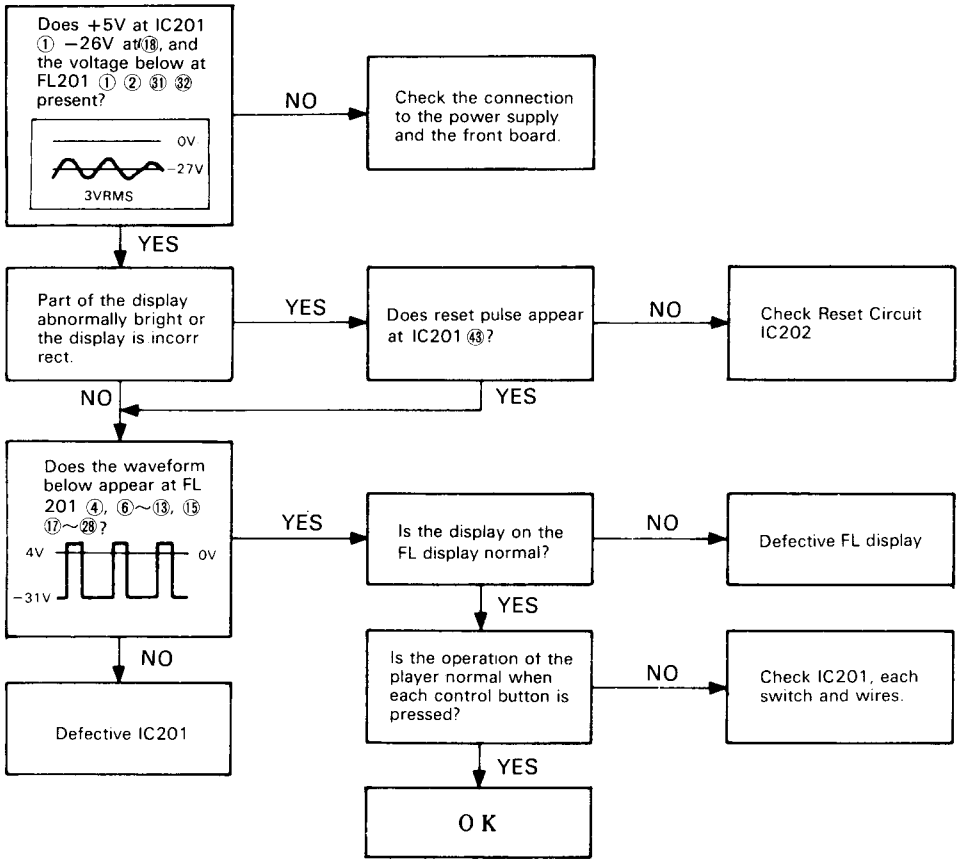
Focus zero-cross signal just before play is started: pulse interval is about 1m sec.



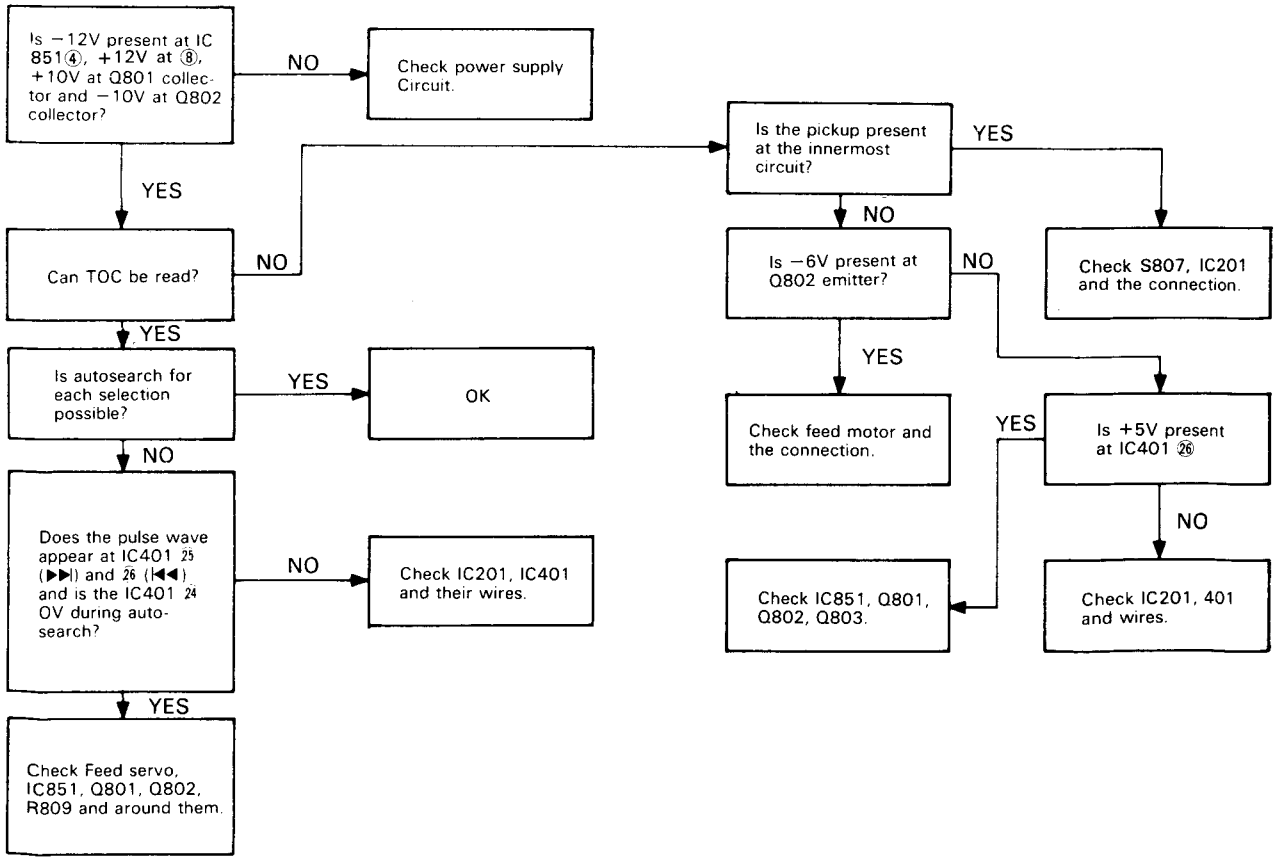
Tracking Servo Circuit


Is 12V pvesent at C 115 ⊕, −12V at C 116 ⊖, +10V at Q 501 collector and −10V at Q502 collector?
NO
Check power supply circuit.
YES
Can TOC be read?
YES
NO
Is the adjustment of tracking offset and tracking gain possible?
NO
Check pickup, IC501, and the connections to the pickup.
YES
Does the ascending lens move inward when the tray is closed?
NO
Does drive wave appear at Q501 and 502 emitter as described left?
YES
YES
NO
Can TOC be read when R528 is short-circuited?
NO
YES
Check IC201, 401, Q507.
Check C504, IC503, Q501, 502 and around them.
Check pickup and the wires to the pickup.
Check IC503,Q504 and around them.
Does pulse appear at IC401 ㉒ when ▶▶| is pressed, and at IC401 ㉓ when |◀◀ is pressed during manual search?
NO
Check IC401, 201 and around KEY.
YES
Is search for each selection correct?
YES
OK
NO
Adjust tracking offset, gain.
Does pulse wave appear at IC502 ① and ② when TP2 is dropped to GND in the PLAY mode?
YES
NO
Does pulse appear at IC401 ⑲ during autosearch?
NO
YES
Check pickup and feed servo.
NO
Defective IC502, Q651, 652 and around them.

FL Display Circuit



Feed Servo Circuit


Is −12V present at IC 851④, +12V at ⑧, +10V at Q801 collector and −10V at Q802 collector?
NO
Check power supply Circuit.
YES
Can TOC be read?
NO
YES
Is autosearch for each selection possible?
YES
OK
NO
Does the pulse wave appear at IC401 25 (▶▶|) and 26 (|◀◀) and is the IC401 24 0V during autosearch?
NO
Check IC201, IC401 and their wires.
YES
Check Feed servo, IC851, Q801, Q802, R809 and around them.
Is the pickup present at the innermost circuit?
YES
Check S807, IC201 and the connection.
NO
Is −6V present at Q802 emitter?
NO
YES
Check feed motor and the connection.
YES
Is +5V present at IC401 ㉖
NO
Check IC851, Q801, Q802, Q803.
Check IC201, 401 and wires.

Spindle Servo Circuit